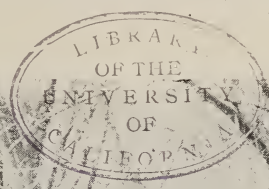


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FEB 9 1916



Gleanings in Bee Culture





How to Secure these Wonderful Plants---Free!

The wonderful Progressive Everbearing Strawberry Plants are becoming immensely popular. No wonder! You set them out in May and enjoy fine berries during the following summer and fall. No long wait for this crop! Progressive Everbearing Strawberries take the risk out of Strawberry growing, too. The plants are much harder than the common varieties. Ordinary spring frosts will not hurt them. Even if a heavy freeze does kill the early spring bloom, in 30 days they will bloom again.

Thru a special contract with a grower of National reputation, The Farming Business is able to furnish to you FREE these wonderful

Progressive Everbearing Strawberry Plants

or, if you prefer, Fall-bearing Strawberry Seeds—the true hybridized sort, and also plants of the ever-popular Chesapeake variety. All strains are pure. The Progressive plants will actually grow and fruit as described. A test patch of a square rod was set in May, 1914. Just 83 days after, the owner began gathering a fine crop, which continued till late October, aggregating 74¾ quarts. The great Chesapeake variety needs no introduction. The Fall-bearing Seeds afford a most interesting way to grow Strawberries. These plants and seeds are scarce this year, and prices will be high, where they are obtainable at all. Act now and insure yours.

Our Plan



NO. 1.—Send \$1 (stamps accepted) for Farming Business—one year—52 big issues—and we will send in addition 12 healthy Progressive Everbearing Strawberry Plants this spring, just at the right time to set. Postage prepaid.

NO. 2.—Send one yearly subscription to The Farming Business, together with \$1 (stamps accepted), and in addition to the paper we will mail you one packet of true hybridized Fall-bearing Strawberry Seeds. This will give you about 500 plants.

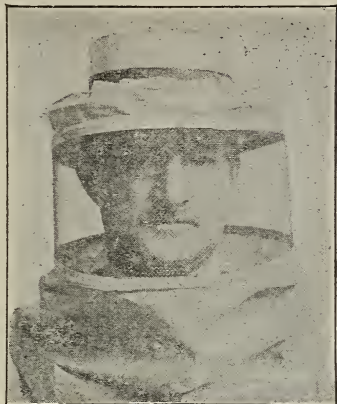
NO. 3.—Send \$2 (stamps accepted) for The Farming Business—2 years, 104 big issues—and we will send in addition 12 Progressive plants and also 25 plants of the popular Chesapeake variety.

You need The Farming Business in your home. It is practical, helpful, progressive, cheery. A great paper for the busy farmer and the entire family. The Vegetable Growers' Magazine Section alone is worth the subscription price. It will pay you to accept one of our liberal offers. If already a subscriber your paper will be continued for an extra year—or two. Accept today to make sure of your free berry plants or seeds.

The Farming Business

Dept. X

500 North Dearborn St., Chicago, Ill.



THE IDEAL BEE-VEIL

Oftentimes when out in the yard working with the bees one stoops over to pick out a frame, and, as usual, bees keep buzzing around his head, watching for a chance to sting. The cloth veil which is often used sticks to the face when one bends over, and gives the bees an opportunity to sting. The IDEAL BEE-VEIL is constructed of cloth of wire, there being a cord at the top of the veil used to pull the cloth around the crown of the hat. The lower part also has a cord which fastens around the waist. The wire on the IDEAL veil does not strike the face, and prevents the bees from stinging. It can be readily seen that a veil of this kind has the cloth veil far outdistanced for comfort and utility. Sparks from the smoker do not burn holes in the IDEALS as in the netting veil.

The veil is manufactured by us, and is recognized by the best and largest beekeepers as the most practical veil on the market.

Red Catalog, postpaid. "Simplified Beekeeping," postpaid.
Dealers Everywhere.

W. T. Falconer Mfg. Co. . . . Falconer, N. Y.

Where the good beehives come from.

HONEY MARKETS

The prices listed below are intended to represent, as nearly as possible, the average market prices at which honey and beeswax are selling at the time of the report in the city mentioned. Unless otherwise stated, this is the price at which sales are being made by commission merchants or by producers direct to the retail merchants. When sales are made by commission merchants the usual commission (from five to ten per cent), cartage, and freight will be deducted; and in addition there is often a charge for storage by the commission merchant. When sales are made by the producer direct to the retailer, commission and storage and other charges are eliminated. Sales made to wholesale houses are usually about ten per cent less than those to retail merchants.

GRADING RULES OF THE COLORADO HONEY-PRODUCERS' ASSOCIATION, DENVER, COL.,
FEBRUARY 6, 1915.

COMB HONEY

FANCY.—Sections to be well filled, combs firmly attached on all sides and evenly capped except the outside row next to the wood. Honey, comb, and cappings white, or slightly off color; combs not projecting beyond the wood; sections to be well cleaned. No section in this grade to weigh less than 12½ oz. net or 13½ gross. The top of each section in this grade must be stamped, "Net weight not less than 12½ oz."

The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

NUMBER ONE.—Sections to be well filled, combs firmly attached, not projecting beyond the wood, and entirely capped except the outside row next to the wood. Honey, comb, and cappings from white to light amber in color; sections to be well cleaned. No section in this grade to weigh less than 11 oz.

net or 12 oz. gross. The top of each section in this grade must be stamped, "Net weight not less than 11 oz." The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

NUMBER TWO.—This grade is composed of sections that are entirely capped except row next to the wood, weighing not less than 10 oz. net or 11 oz. gross; also of such sections as weigh 11 oz. net or 12 oz. gross, or more, and have not more than 50 uncapped cells all together, which must be filled with honey; honey, comb, and cappings from white to amber in color; sections to be well cleaned. The top of each section in this grade must be stamped, "Net weight not less than 10 oz." The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

Comb honey that is not permitted in shipping grades

Honey packed in second-hand cases.

Honey in badly stained or mildewed sections.

Honey showing signs of granulation.

Leaking, injured, or patched-up sections.

Sections containing honey-dew.

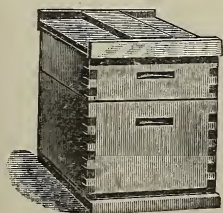
Sections with more than 50 uncapped cells, or a less number of empty cells.

Sections weighing less than the minimum weight. All such honey should be disposed of in the home market.

EXTRACTED HONEY

This must be thoroly ripened, weighing not less than 12 pounds per gallon. It must be well strained, and packed in new cans; sixty pounds shall be packed in each five-gallon can, and the top of each five-gallon can shall be stamped or labeled, "Net weight not less than 60 lbs."

Extracted honey is classed as white, light amber, and amber. The letters "W," "L A," "A" shall be used in designating color; and these letters should be stamped on top of each can. Extracted honey for shipping must be packed in new substantial cases of proper size.



Early-order Discounts will

Pay You to Buy Bee Supplies Now

30 years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. . . . Write for our illustrated catalog and discounts today.

Leahy Mfg. Co., 95 Sixth St., Higginsville, Missouri

STRAINED HONEY

This must be well ripened, weighing not less than 12 pounds per gallon. It must be well strained; and, if packed in five-gallon cans, each can shall contain sixty pounds. The top of each five-gallon can shall be stamped and labeled, "Net weight not less than 60 lbs." Bright clean cans that previously contained honey may be used for strained honey.

Honey not permitted in shipping grades.

Extracted honey packed in second-hand cans.

Unripe or fermenting honey weighing less than 12 lbs. per gallon.

Honey contaminated by excessive use of smoke.

Honey contaminated by honey-dew.

Honey not properly strained.

NATIONAL BEEKEEPERS' ASSOCIATION GRADING-RULES
Adopted at Cincinnati, Feb. 1913.

Sections of comb honey are to be graded: First, as to finish; second, as to color of honey; and third, as to weight. The sections of honey in any given case are to be so nearly alike in these three respects that any section shall be representative of the contents of the case.

I. FINISH

1. *Extra Fancy*.—Sections to be evenly filled, combs firmly attached to the four sides, the sections to be free from propolis or other pronounced stain, combs and cappings white, and not more than six unsealed cells on either side.

2. *Fancy*.—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than six unsealed cells on either side, exclusive of the outside row.

3. *No. 1*.—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than 40 unsealed cells, exclusive of the outside row.

4. *No. 2*.—Combs not projecting beyond the box, attached to the sides not less than two-thirds of the way around, and not more than 60 unsealed cells exclusive of the row adjacent to the box.

II. COLOR

On the basis of color of the honey, comb honey is to be classified as: first, white; second, light amber; third, amber; and fourth, dark.

III. WEIGHT

1. *Heavy*.—No section designated as heavy to weigh less than fourteen ounces.

2. *Medium*.—No section designated as medium to weigh less than twelve ounces.

3. *Light*.—No section designated as light to weigh less than ten ounces.

In describing honey three words or symbols are to be used, the first being descriptive of the finish, the second of color, and the third of weight. As for example: Fancy, white, heavy (F-W-H); No. 1, amber, medium (1-A-M), etc. In this way any of the possible combinations of finish, color, and weight can be briefly described.

CULL HONEY

Cull honey shall consist of the following: Honey packed in soiled second-hand cases or that in badly stained or propolized sections; sections containing pollen, honey-dew honey, honey showing signs of granulation, poorly ripened, sour, or "weeping" honey; sections with comb projecting beyond the box or well attached to the box less than two-thirds the distance around its inner surface; sections with more than 60 unsealed cells, exclusive of the row adjacent to the box; leaking, injured, or patched-up sections; sections weighing less than ten ounces.

NEW YORK.—The market is very inactive, both on comb and extracted honey, and large buyers are few and far between. Prices rule about the same as in our last report.

New York, Jan. 22. HILDRETH & SEGELKEN.

INDIANAPOLIS.—Trade has not been very active in comb honey during the past three weeks; however, the demand for extracted is fairly satisfactory. Choice No. 1 white comb honey is selling at \$3.75 to \$4.00 per case, and \$3.50 per case for No. 2. Finest grades of extracted are selling at 9½ to 11, according to quantity. For beeswax we are paying 28 cts. cash or 30 in trade, delivered.

Indianapolis, Jan. 20. WALTER S. POWDER.

DENVER.—Local demand for comb honey light with ample supply. We are selling in a jobbing way as follows: Fancy white, per case of 24 sections, \$3.15; No. 1 per case, \$2.93; No. 2 per case, \$2.70. White extracted, per lb., 8½ to 8¾; light amber, 8 to 8¾; amber, 7 to 8. We pay 25 cts. per lb. in cash and 27 cts. per lb. in trade for clean yellow beeswax delivered to us here at Denver.

THE COLORADO HONEY-PRODUCERS' ASSOCIATION.
Denver, Jan. 22.

ST. LOUIS.—There is no change since our last quotations, and our honey market is still very dull and slow, with stocks ample for all demands. We are quoting white comb honey, 24 sections to the case, at \$3.25 to \$3.50 per case; amber, from \$2.50 to \$3.00 per case; extracted in 60-lb. cans, 5 to 8½; southern amber extracted, in barrels, from 5 to 6, according to quality. Beeswax is firm at 28½ for pure; impure and inferior, less.

R. HARTMANN PRODUCE CO.

St. Louis, Jan. 21.

KANSAS CITY.—The supply of both comb and extracted honey is large, and the demand very light—especially on extracted. We quote No. 1 white comb honey, 24-section cases, at \$3.10 to \$3.25. Some sales of No. 1 comb have been made at \$3.00. No. 2 white comb honey, 24-section cases, bring \$2.75 to \$3.00; No. 1 amber ditto, \$3.00; No. 2 ditto, \$2.50 to \$2.75; extracted white, per pound, 7½ to 8; ditto amber, light, 6½ to 7; ditto, dark, 5½ to 6. Beeswax, No. 1, brings 28; No. 2, 25.

C. C. CLEMENS PRODUCE CO.

Kansas City, Mo., Jan. 17.

We are in the Market to buy both comb and extracted honey. Write us what you have to offer, naming your best prices delivered. Every time an interesting price is named us, we buy, and remit the day shipment arrives.

Ship Us Your Old Comb We render it into wax, and pay market price.

The Fred W. Muth Co., 204 Walnut Street, Cincinnati, Ohio
"The Busy Bee Men"

QUEENS FOR EARLY SPRING DELIVERY

We conduct a Bee and Queen Rearing Business in Florida during the winter, and at Canton, Ohio, during the summer. We now have a carload of selected Italian Bees in Florida for the purpose of supplying you with Bees and Queens for EARLY SPRING DELIVERY. WE GUARANTEE PURE MATING AND SATISFACTION IN EVERY RESPECT, OR MONEY REFUNDED. We are breeding from Queens that gave a surplus of 300 pounds per colony in a 24-day honey-flow. Will it not pay you to have this strain of bees in your yard? Prices as follows:

ISLAND-BRED ITALIAN QUEENS.

Shipments begin March 1.

	1	6	12
Untested	\$1.50	\$ 7.50	\$12.00
Tested	2.00	10.50	18.00
Select Tested ...	3.00	15.00	24.00

Tested Breeding Queens,
\$5.00 and \$10.00 each.

Prices on Nucleus and Full Colonies without Queens. Shipping Now.

One-frame Nucleus	\$2.00	Three-frame Nuclei	\$4.00	Eight-frame Colony	\$ 8.50
Two-frame Nuclei	\$3.00	Five-frame Nuclei	5.00	Ten-frame Colony	10.00

PRICES ON BEES BY THE POUND F. O. B. SHIPPING POINT. Shipment begins May 10.

	1	6	12
1/2-lb.	\$1.50	\$ 7.50	\$12.00
1-lb.	2.00	10.50	18.00
2-lbs.	3.00	15.00	27.50
3-lbs.	4.00	21.00	36.00
5-lbs.	5.50	27.50	50.00

(These prices are without Queens)

Address all communications to

THE J. E. MARCHANT BEE AND HONEY COMPANY, CANTON, OHIO

Select Bred Three-banded Italian Queens

After 20 Years of Select Breeding We have Bees in Quality Second to None

Price List of Our Queens

Tested	\$1.25 or \$1.15 per 100	Untested75 cts. or \$70.00 per 100
Select Tested	1.50 or 1.25 per 100	Select Untested90 cts. or 85.00 per 100

Price List of Our Swarms of Bees in Packages

1 lb. 1 to 50, \$1.25 each; ... 50 to 100, \$1.20 each; ... 100 to 500, \$1.15 each
2 lbs. 1 to 50, \$2.35 each; ... 50 to 100, \$2.30 each; ... 100 to 500, \$2.25 each

If queens are wanted, add price as according to price list.

Our select colonies used for breeding purposes, larvæ, and select drones, are those of the highest standard, the choice of over 1000 hustling, honey-producing colonies of pure Italian bees. These select colonies are located in our queen-yard at such a distance from all other bees as to assure pure mating, and thus effective use of our select drones. The larva used in grafting is as small as can be seen and handled, having just come out of the egg. All cells are drawn and nourished in strong ten-frame colonies just running over with young bees. Thus we are able to produce large, long-lived and hardy queens, which give workers unexcelled for honey production.

Our capacity is 6000 queens and 5000 pounds of bees a year, or 50 queens and 100 1-lb. swarms a day. All queens warranted purely mated or are replaced free of charge.

Safe arrival and satisfaction we guarantee or we refund your money.

We have no disease, and foul brood has never been known in our community.

Book your order now; only a small cash payment required.

M. C. BERRY & CO., Hayneville, Alabama -- Successors to Brown & Berry

Largest shippers of young pure Italian bees in the South.

QUEENS OF QUALITY

The editor of *The Beekeepers' Review* and his sons have 1100 colonies of bees worked for extracted honey. With all those bees working with equal advantage, all having the same care and attention, they have an opportunity unexcelled to ascertain without a reasonable doubt colonies desirable as breeders from a honey-producers' standpoint. Likely, never in the history of beekeeping was there a better opportunity to test out the honey-getting strain of bees than this. Think of it, 1100 colonies with equal show, and a dozen of those colonies storing 250 to 275 pounds of surplus honey this last poor season (with us), while the average of the entire 1100 being not more than 40 pounds per colony. We have sent two of our best breeding queens (their colonies producing 275 pounds surplus each, during the season of 1915) to John M. Davis, and two to Ben C. Davis, both of Spring Hill, Tenn., and they will breed queens for the *Review* during the season of 1916 from those four superior honey-gathering breeding queens. Those young queens will be mated with their thoroughbred drones. Our stock is of the three-banded strain of Italians; also that of John M. Davis; while Ben C. Davis breeds that disease-resisting strain of goldens that is becoming so popular.

By this time you are likely thinking that your strain of bees may be improved some by the addition of this superior strain of *Review* queens, and how you can secure one or more of those superior honey-gathering queens as a breeder. We will tell you. They will be sold to none except *Review* subscribers. If you are a paid-in-advance subscriber to the *Review* for 1916, we will mail you one of the daughters of those famous queens in June for a dollar. If not a subscriber to the *Review* for 1916, send \$1.75 for a year's subscription to the *Review*, and one of those famous queens. These queens are well worth two dollars each compared to the price usually charged for ordinary queens, but we are not trying to make money out of this proposition, only we are anxious to have every subscriber to *GLEANINGS* a subscriber to the *Review*, and we are taking this way to accomplish the object. A few of the very first orders for queens that we receive can be mailed in May, but the majority will not be mailed until June. Orders filled in rotation. Have your order booked early and avoid disappointment. Address with remittance

THE BEEKEEPERS' REVIEW, Northstar, Michigan.

Gleanings in Bee Culture

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Editor

A. I. ROOT

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H. H. ROOT

Managing Editor

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Business Mgr.

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HOW TO REMIT. Remittances should be made by draft on New York, express-order or money-order, payable to the order of The A. I. Root Co., Medina, Ohio. Currency should be sent by registered letter.

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CHICAGO.—There are very few sales of honey being made at this time, and under these conditions it is difficult to quote prices. The weather at this writing is about zero, and comb honey will not bear shipment without being injured more or less.

Chicago, Jan. 17. R. A. BURNETT & Co.

NEW YORK.—Clover, comb, No. 1 to fancy, 13 to 14; ditto, lower grades, 11 to 12; clover, extracted, 7 to 8; buckwheat, extracted, 6 to 7; California, extracted, 6 to 8; Southern, extracted, per gallon, 50 to 75; West Indian, extracted, per gallon, 50 to 53.

New York, Jan. 22.

CINCINNATI.—Very little honey is selling at present. We quote No. 1 comb at \$3.75 to \$4.00; No. 2 at \$3.50 to \$3.75; white clover extracted in cans, 7 and 9; amber in barrels, 5½ to 7, according to quality and quantity. For choice, bright yellow beeswax we are paying 28 cts. per lb. delivered.

Cincinnati, Jan. 20. THE RED W. MUTH Co.

ALBANY AND SCHENECTADY.—There is little call for either comb or extracted; and from the many inquiries in regard to the condition of our market from producers, we judge there is still a large quantity of honey in their hands unsold, especially light extracted and amber. There is some demand for buckwheat. There may be an improvement later. January is not the best month in which to sell honey.

CHAS. MACCULLOCH.

Albany and Schenectady, Jan. 25.

ZANESVILLE.—The post-holiday lull is affecting somewhat the demand for honey, tho the market shows no material change as regards prices. In small lots the better grades of white comb bring around \$4.00 per case, jobbers receiving customary discount from prices to the retail trade. White extracted we quote at 9 to 11 cts., according to quantity. Producers receive for beeswax 28 cts. cash, 30 in exchange for merchandise.

Zanesville, Jan. 22.

E. W. PEIRCE.



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John Nebel & Son Supply Co.

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Patent Counsel of The A. I. Root Co.

Chas. J. Williamson, McLachlan Building
WASHINGTON, D. C.



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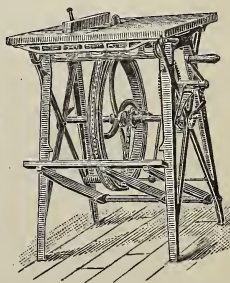
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C. H. W. Weber & Company, Cincinnati, O.

2146 Central Avenue

Beekeepers' Prescription Book

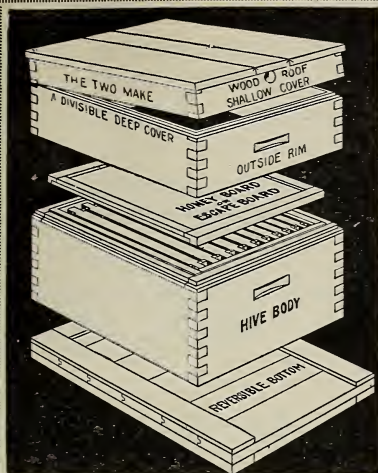
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Norwichtown, Conn., May 24, 1915. (Extract from letter and order): Our State Agricultural College has just been voted a sum of money to be used in the construction of an apiarian building and outfit. They are negotiating with me for some colonies, and I will furnish them in your Protection Hives, for I believe them to be the best on the market. ALLEN LATHAM.

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"Superior" Foundation
on shares. Write for special prices.
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(Weed Process)

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Amber honey, 7½ cts. pound; light honey, 8½ cts.
pound. Catalog free.

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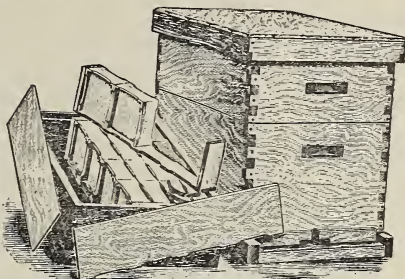
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GLEANINGS IN BEE CULTURE

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NO. 3

EDITORIAL

REPORTS from our California readers indicate good rains thus far. One letter written January 14 gives the rainfall to date as over 15 inches, nearly 6 inches more than last year at the same time.

WE must beg the indulgence of our readers a little longer till we can catch up in our printing department. One thing after another has come in upon us, and these, together with the yearly index, have kept us behind. We are running almost night and day, and hope to be caught up by another issue or two.

The 1916 Spelling in Gleanings

AMONG the new year's resolutions we put into practice for this year is a typographical one. As our discriminating readers have noticed, we have discarded a few of the old and prolix forms of spelling which have come down to us from Saxon days without any real reason for their being.

In short we have adopted the list of ten words picked out by the National Educational Association as worthy of simpler spelling. The following are the words: thru, thruout, thoro, thoroly, tho, altho, prolog, program, catalog, and decalog. The old forms for which these are substituted are familiar to every one.

This list has been adopted by some of the best magazines in this country. Among farm papers, *Successful Farming* made the change just recently. So you see, far from being faddists, we are simply falling in with progressive journalism.

The Lament of Job

OUR old friend Holtermann is "all in the dumps" over European foul brood. (See page 116). Like the Job of olden times, to whom he compares himself, he has friends who only increase his distress. He wants to know if there is any one who has been able to stamp out absolutely European foul

brood after it had gotten a hold in an apiary. He is not interested in the fellow who claims he has cured it but yet never got entirely rid of it. How about Dr. Miller? Is there not some one (if not the venerable doctor) who can give our friend a crumb of comfort? While there are some who have an utter contempt for American foul brood, there are others who care no more for European foul brood than they do for a case or two of bee paralysis or laying workers.

Verily we believe that our correspondent is seeing only the dark clouds and not the silver lining that breaks into a nearly clear sky.

Care of Comb Honey during Winter Months; How to Prevent Granulation

EMPHASIS cannot be laid too strongly on the importance of keeping comb honey at a temperature as warm as the living-room. It is almost equally important that it be maintained uniform. A temperature down to 65 that is uniform is not as favorable to granulation as a temperature of 75 during week days, and then going down to 40 or 50 during Sunday when everybody is gone from the warehouse or store. Comb honey that has started to granulate can be checked by keeping it at a uniform temperature of 80 or 85. At the last-named point, however, there is some danger of the combs sagging and leaking.

We are satisfied that a majority of stores and warehouses where comb honey is kept have variable temperatures — sometimes down to 50 and even 45. A large number of honey-buyers do not realize the importance of keeping comb honey uniformly warm while in storage, and they will pay for it dearly before next spring.

Where natural gas is cheap the temperature can be controlled very nicely. A soft-coal fire or a wood fire is too irregular. A gas-stove or a stove burning hard coal will usually maintain a temperature of somewhere about 75; but when the weather outside warms up, the fire should be reduced.

A temperature of 85, dropping down to 70, back and forth, is not as favorable to anti-granulation as one of 75 maintained day in and day out every hour of the day.

A New-old Cure for European Foul Brood

WE would call particular attention to the article by Timbeline Riggs, on page 102, on the new cure for European foul brood. While at first sight it might seem as if the cure were new, yet in view of the fact that it involves the fundamental principles used in the treatment of this disease, the cure is really old.

We have had talks with the New York State inspectors, who have had more experience with European foul brood than perhaps any others. We have heard them, time and time again, urge the importance of vigorous Italian stock, and keeping all colonies strong; and not only strong, but in a prosperous condition, and that means, of course, feeding if they are not liberally supplied with stores.

Mr. Riggs speaks of contracting the space occupied by nuclei. From conversation with inspectors we are of the opinion that it is unwise to fuss with anything but strong colonies. In this he differs from the accepted practice in the cure of the disease.

The Net-weight Law Effective within 24 States as well as in Interstate Business

A NUMBER of the different states have passed net-weight laws to conform to the federal net-weight regulation. Where there is no law operative in any state, it is not necessary that comb-honey producers, for example, mark the exact net weight or minimum net weight on their sections. But as 24 states have passed such laws it is important for us to know which ones they are. We wrote, therefore, to the Department of Commerce, of the Bureau of Standards, Washington, D. C., and received the following from the director:

Dear Sir:—This list is not presumed to be complete, as the session laws for the past two years have not been examined carefully except in the cases of a few states. We are anxious to bring this information up to date, but the press of other work has prevented us from doing so.

S. W. Slatton, Director.

Washington, D. C., Dec. 18

List of states having laws which require packages containing commodities to be marked with the net contents.

Arizona, 1913.—Foods: A large number of foods and classes being enumerated, but there is no gen-

eral statement. California, 1913.—"Provisions . . . apply to foodstuffs and stuffs intended to be used or prepared for use as food for human beings," or eaten or drunk by human beings. Connecticut, 1911.—Food only. Florida, 1911.—Food only. Georgia, 1913.—Food only. Indiana, 1913.—All commodities to be sold by weight or measure, except commodities customarily sold by numerical count, or in gross, or in packages so marked as to indicate contents. Iowa, 1913.—"All dry commodities weighing ten ounces or more, except drugs, section comb honey, and those specified in section nine" (relating to berries). Louisiana, 1914.—Food only. Maine, 1913.—Food only. Massachusetts, 1914.—Food only. Michigan, 1913.—Food only. Montana, 1913.—"Any commodity or article of merchandise in a package or container." Not applicable to packages selling for ten cents or less. Nebraska, 1913.—Certain food products only, some exceptions; statute does not include all food. Nevada, 1911.—"Any commodity or article of merchandise." New Hampshire, 1913.—Food. North Dakota, 1907.—Food and beverages. New York, 1913.—All commodities except those for which special containers are provided. Pennsylvania, 1913.—All commodities. South Dakota, 1911.—Food. Tennessee, 1913.—Food. Utah, 1915.—Foods. West Virginia, 1915.—All commodities. Wisconsin, 1913.—Foods. Wyoming, 1911.—Foods.

Bureau of Standards, Dec., 1915.

In view of the fact that one's honey may be shipped outside of the state in which he resides, and be sold, we will suppose, where there is no net-weight law, such shipper would be liable to Uncle Sam. Whether a state has a net-weight law or not, it is always wise and safe to mark the net weight on every section.

Shall we Clip One or Both Wings of our Queens?

MR. D. D. STOVER, of the Stover Apiaries Co., Mayhew, Miss., seeing our article in the A B C and X Y Z of Bee Culture, wherein we recommend clipping *both* wings from *one* side of a queen, writes that he clips only the large wing on one side, leaving the smaller one under it intact. He has found it, he says, just as effective in preventing the flight of a queen as to clip both wings. Moreover, it does not mar the appearance of the little lady, and at the same time it makes it easier to pick her up.

We replied by saying that we were of the opinion that the one-wing plan would still leave the queen able to fly possibly a yard or more from the hive, and thus get lost. Mr. Stover came back by saying that, if the large wing is clipped close to the body, there will be no danger of the queen flying at all.

We finally referred the matter to Dr. Miller, who has had a very large experience on queen-clipping. His reply is so valuable that we are glad to give it to our readers:

A good many times it has happened that, when clipping a queen, I have taken off only

the large wing on one side. Such a queen is more easily caught, her beauty is practically unmarred, and I think she can fly no better than a queen with two wings clipped. But when I find a queen of that kind she is immediately caught and the small wing taken off. The mere fact that her beauty is practically unmarred condemns utterly the one-wing plan, at least for my use; for unless I can get a good square look at the one-winged queen I cannot tell whether she is clipped or not; whereas if both wings are clipped I can spot her with the least glance as she dodges around a corner. For one who cares much for the appearance of a queen and a little for the time spent in looking for her, the one-wing plan may be all right.

The last argument of Dr. Miller, that clipping both wings enables one to tell at a glance whether the queen is clipped or not, is a clincher. It might take two or three good square looks to determine whether a queen on the Stover plan has been clipped. It very often happens in the height of the season, when colonies are strong, that one glimpse is about all one will get of her majesty, so it is not altogether a question of looks but one of saving time when time is most valuable.

How to Keep Bees Fresh and in a Normal Condition at Expositions

IN the initial article in this issue, by Prof. George A. Coleman, an interesting fact is brought out; namely, that an observatory hive can be placed inside of an exposition building having an entranceway thru an ascending tunnel 7 feet from the hive itself to the outside wall of the building. When we were visiting Prof. Coleman at the University last winter he raised the question whether bees could be made to go thru a long passageway. We told him we knew it had been done; but when he stated it was necessary to have a tunnel 7 feet long and 10 feet above the ground we had some misgivings.

The fact that the bees used this long runway as a means of exit and actually swarmed out of it is interesting and valuable, as it will solve the problem of live bees on exhibit at expositions and agricultural fairs. It also emphasizes the importance of making arrangements in advance to have the exhibition of bees and bee-appliances next to the outside wall of the building. When the exhibit is centrally located, the observatory hive must have fresh bees every four or five days; and even then they will be uneasy, crawling up and down the glass, seeking a means of exit. This nervousness or uneasiness causes an abnor-

mal condition, giving the public the idea that bees are generally on a constant run and excited, when the very reverse is true.

It is also interesting to note that the bees flew over the heads of thousands upon thousands of sightseers for months at a time, and no one was stung.

A Winter Case with Inner as well as Outer Walls for Holding Four Regulation Single-walled Hives

ONE of our subscribers, Mr. S. K. Best, of Youngstown, O., writes that he has seen nothing in GLEANINGS relative to a double-walled winter case for holding four hives. By this he means a case made up of matched house-siding for the outer wall, and cheap lumber for the inner wall, the space between the two walls being packed with straw or other material. In order to facilitate removal of the four hives set down in the inner compartment he would have a 1½-inch space for clearance which would really result in a dead-air space between the hives proper and the inner walls of the case. The four hives are each to be covered with an eight-inch cushion. Of course suitable provision has to be made for providing entranceways thru the packing and to the inner hives.

The advantage of this arrangement, Mr. Best thinks, would be that a given number of colonies could be put into winter quarters and taken out in less time than where the packing material had to be shoveled out of the cases until the hives could be uncovered so that they could be removed.

There is no use in trying to dodge the fact that the quadruple case of the Holtermann type involves a great amount of labor in packing and unpacking. The packing material must be handled over and over again at each operation.

One thing in favor of the plan proposed by Mr. Best is that some labor will be saved, but not much. By the Holtermann plan, from 300 to 400 colonies can be packed in a day by two men. The labor of unpacking and removing the packing would be about the same. Perhaps Mr. Best's plan would save half of that time. But suppose it saves three-fourths: the relative difference in the cost of packing and unpacking per colony would not be large. On the other hand, the double-walled cases would be considerably more expensive because an extra wall would have to be provided. Then there would be an objection to the dead-air space between the hives and the inner walls of the case. Cold air would be pretty sure to percolate thru the entranceway into the dead-air

space. While, of course, it is supposed to go into the hive itself, yet if it leaks and travels all around the four hives, a considerable portion of the benefit of the packing would be lost.

The large quadruple cases of the generally accepted type are expensive enough; and it is our opinion that it would actually cost more in the aggregate to make the cases with an inner as well as an outer wall. As a matter of fact, there is no advantage in the inner wall after the bees are packed, because the wall of the hive itself is sufficient. There is nothing like having the packing come in direct contact with the hives themselves. There is then no opportunity for circulating currents around the hives.

The Number of Colonies Needed to Pollinate Properly a Citrus Orchard

ON page 1000 of our issue for December 1st we made the statement in reply to Mr. Paul J. Davis, Glenn, Cal., that a much smaller number of bees are required to pollinate a citrus orchard, either in California or Florida, than an apple, peach, pear, or cherry orchard in the North. We have used the estimate of about a colony to the acre in our northern orchards, and this number in numerous recorded instances appears to have been sufficient to secure record-breaking crops of fruit. Considering the fact that there are only two or three days out of the whole blossoming time when the bees can mingle pollen, and sometimes not over two or three *hours*, it is apparent that we need many more bees in the North than in the South, where the blossoming time extends over two or three months, and where the weather is always favorable except for occasional rains. We are reminded that E. G. Baldwin, of Stetson University, Deland, Fla., who wrote an article on Florida beekeeping for one of the Florida papers, estimated that five colonies are needed to the acre in a citrus grove. See GLEANINGS, page 216, March 15th issue. He may be right; but *if* one colony per acre of trees in the North will do the work it would seem that one-tenth of that number would be sufficient in a southern grove. We have gone thru a large number of citrus groves in Florida and in California, and asked the proprietors if they had any bees there.

"None whatever."

"Are there not some in your locality?"

"Not that we know of."

And yet the significant fact was they were securing good crops of fruit. We have generally told these people that there

were more bees in their localities than they supposed, *and have never yet failed to find bees on the blossoms* in orchards where it was claimed there were no bees. These bees were probably wild, or in the hands of some person unknown to the owners of the grove, and yet the number was sufficient to do the work because the yields were good.

As nearly as we can estimate, one or two colonies could, in some localities, some seasons, take care of a hundred acres of citrus groves. Of course it would be advisable to have many more.

If we are wrong in our estimate of the number of bees required in citrus groves, it is important that we be corrected as speedily as possible in the interest of more and better fruit. The question of how many bees are needed in fruit orchards is being agitated not a little. We should be glad to get expressions from our friends—particularly from Prof. Baldwin, who has given the matter not a little study.

Later.—Since writing the foregoing the following has come to hand:

Lack of Pollination in Orange-groves

THE following clipping from the *Hemet News*, Hemet, California, was sent in by a correspondent. As we believe it states an absolute truth we are glad to place it before our readers.

BEEES IN ORANGE-GROVES.

Otto Lowentrou, deputy county clerk and long-time orange-grower, says in the *Riverside Press*:

"I believe that one of the chief causes why many of the Riverside orange-groves have gone back is because we no longer have bees here. It will be remembered," he said, "that when it was found necessary to prop the heavily laden orange-trees all thru the valley, bees were kept at many points thru the city. Then an ordinance against beekeeping in the city was passed, and orchardists who had kept bees as a profitable side line sold their apiaries. We have been told that the orange-blossoms are self-pollinating; but until there is actual proof of this fact it would seem the part of wisdom to keep the bees inside the city. I do not believe that all orange blossoms pollinize themselves, and I feel sure that an investigation would show that our decreased orange crops are due in no small measure to the fact that bees no longer draw their honey store from our orange blossoms."

While we have said before that orange-groves do not need as many bees per acre as apple-orchards in the North, yet when there are no bees present it is very plain why the yield per acre drops down as stated in this clipping.

Dr. C. C. Miller

STRAY STRAWS

Marengo, Ill.



I AM quoted in *Bienen-Vater*, p. 180, as saying in GLEANINGS that there is no buckwheat in America. That was heather (Heide), friend Richter, I was talking about. Plenty of buckwheat here.

GRACE ALLEN, p. 6, I don't believe a pound of two-to-one syrup equals a pound of honey for wintering. About 1.07 pounds comes nearer to it; but a little extra must be added to pay for evaporating out the extra water. Make syrup $2\frac{1}{2}$ to 1, and there will be no extra water.

RIETSCHKE foundation-presses are used by the thousand in Europe, beekeepers making their own foundation. But it's expensive business. Franz Richter once told about a beautiful lot, faultlessly made, but it took $2\frac{2}{3}$ times as much wax as for the same number of sheets of Weed foundation.

To get a label to stay on a five-pound pail is not easy. A good thing is to have the paper long enough to reach around the pail and lap over, with the label printed twice upon it. [If you get the right kind of prepared paste the label will adhere to tin. We have no trouble of that kind; but it is not an easy thing to make up a paste that will do it.—Ed.]

SWISS beekeepers claim a near approach to non-swarmer bees (black bees), and reports seem to warrant the claim. Of 293 reporting for the past season, 203 have had no swarm, 74 few, and 16 many swarms. Nor is this different from reports for a number of years past.—*Schweiz. Bztg.*, 424. I believe non-swarmer bees are just as possible as non-sitting hens.

ACCORDING to *Leipziger Bienenzeitung*, p. 173, I tried for years to secure larger bees by having them reared in drone-cells. No, Pastor Fleischmann, I never tried the experiment. But I did get bees from Florida so large that their worker-cells were as large as ordinary drone-cells. How they were secured I don't know. And I don't know whether they were worth more than bees of usual size.

C. JUNGFLISCH reports, *L'Apiculteur*, 75, that he made a super from the boards of an old hive. It was well glued inside, and he planed and painted it outside. Blisters formed under the paint; and on trying to flatten them with his fingers he found they were filled with water. He reluctantly concluded it was better in summer to have

supers without paint, and still more important for hives in winter.

THAT diagram, p. 1010. Please don't fail to note that item of "undetermined matter," 3.68 per cent, or one in every 27 parts. Those things—iron, phosphoric acid, etc., are not found in sugar, and so they give to honey a value as food that is not found in sugar. Indeed, in some cases they make honey an invaluable medicine. Some day cane sugar will be considered a rather poor substitute for honey as an article of food for the human family—also for the bee family.

"Two men with a rope can carry bees in so that they will hardly know that they have been moved," p. 1015. Two men did better than that here, Dec. 4. With never a veil or a glove, each one picked up a hive, hugged it to his bosom, took it into cellar and set it in place, doing the job in just half the time they could have done it with a rope. But they were eight-frame hives; and if Doolittle says I'd be better off with larger hives, I'm not going to have any argument with him.

JUNG-KLAUS, the brilliant Sammal Korb man, quotes in *Deutsche Imker*, p. 184, a paragraph about my enthusiasm and record crop and then says that if it is true that 100 kilograms average per colony of comb honey is possible only in America, and there only by taking away all honey at the time of harvest, and then systematically feeding back—sugar. Guess again, friend Jung-Klaus. No man in Europe is more bitterly opposed than I am to sugar-feeding—have not fed a grain for years. Besides, as it was all comb honey you can see I could take it only from the supers, leaving the stores in the brood-chamber untouched. He further thinks that all my enthusiasm is for the "almighty dollar," and that a genuine bee-enthusiast will suffer ten years of failure and still carry in his heart enthusiasm for the little bee. True enough; but does it follow that success would kill such a man's enthusiasm? Even if that be true, I've had difficulties enough to keep my enthusiasm alive. At the end of my first eleven years of beekeeping, after having first and last bought quite a number of colonies, at one time having had 50 colonies, all I had to show for my eleven years of effort was two colonies! and I've had plenty of failures since then. Don't you think, Jung-Klaus, you can afford to credit me with a little enthusiasm? Just a little, please.

Grace Allen

THE DIXIE BEE

Nashville, Tenn.



January came in with a retinue of flying bees, buzzing flies, broody hens, and dandelions in bloom. This morning, Jan. 12, it was too warm outside, even hatless and coatless, to frolic comfortably with our strenuously playful kitten who runs when you chase and chases when you run. But this afternoon something broke in a storm, and a cold wave is now reported on the way. Warm mild weather it has been so far, yet damp and unseasonable, bringing colds and grip to countless people and causing the bees to consume their stores pretty fast. Morning after morning they have been out at eight o'clock, working up an appetite for breakfast. They seem to be wintering all right, if you can call this wintering. So far they have not worn themselves out generating heat, that's sure. But we should not like to face a long, lingering, chilly spring, with depleted stores.

We have been glad in each of our frequent winter rains that all our hives are tipped pretty well forward.

Use 5/7 of a pound of sugar for each pound of honey lacking, when feeding sugar syrup in the fall, Dr. Miller says, which is what I wanted to get. Mr. Bruce Anderson has recently sent me a newspaper report of the work in North Carolina of Mr. E. G. Carr, one of the Federal bee experts, and in it Mr. Carr recommends feeding one full pound of sugar for each pound of honey lacking in the fall. Perhaps Mr. Carr was taking into account the point raised by the editor, that, pound for pound, the sealed syrup stores may not be of equal value to sealed honey stores. [See Mr. Byer's comment in his department, this issue.—Ed.]

In this report of Mr. Carr's work I was also interested to note that he advises requeening every second August, and also packing hives into winter cases in the fall, even here in the South. If the winter losses in the South are from 5 to 15 per cent, as Bulletin 325 estimates, perhaps better winter protection will do away with a large part of this, and being sure of queens in the fall eliminate most of the rest.

The new hive arrangement on p. 30, Jan. 1, interested me a lot. I feel as tho Mr. McCready has rather "beat me to it," as I had already decided that some day I should startle the beekeeping world with some bril-

liant plan of my own to do quite away with lifting. I have gravely considered this placing of hives alongside one another, also of tiering up on one end of the Long Idea hive; and then there are various other promising combinations still too vague to put on paper, but very superior, as one's own unformed ideas always are. I like some things in Mr. McCready's hive, and some things I don't. It looks unnecessarily spread out somehow, and seems like a more awkward arrangement than the simple long hive of Mr. Poppleton. I should think, too, that it would be more difficult working with the bees in the brood-chamber if the operator has to reach across a side super. ("Side super" sounds a bit contradictory, doesn't it? One might call them "wings," perhaps.) On the other hand, this arrangement makes use of equipment already on hand. Then, too, the snug way that the brood-chamber is tucked away in the center looks as tho it must have advantages. I can't help thinking that, while winter cases with their generous packing may bring about splendid results, there ought to be some less expensive way to accomplish the same thing—less expensive and easier too. Perhaps Mr. McCready is on the right line.

Another person that "beat me to it" is Mr. Pelham Grenville Wodehouse, according to the notice on page 35, Jan. 1, where mention is made of a serial story running in the *Saturday Evening Post* with a beekeeper conspicuous in it. Now, if Mr. McCready has evolved my effort-saving hive, and Mr. Wodehouse has written my story putting the beekeeper into literature, what, pray, is there left for me to do?

Oh heart of mine, we'll sing!
And Life's fair cup of gold
We'll fill as full of winery song
As it will hold!

A song of flashing bees
With swift, ecstatic wings
And dauntless mood that flies afar
And sings.

A magic-hearted song,
A song of big desire,
Of wonder and of withery
And fire.

A yearning song and wild,
Whose haunting music streams
Across tired hearts, and brings them back
Their dreams.

NOTES FROM CANADA

J. L. Byer, Markham, Ont.



See here, Dr. Miller; I am a bit surprised at what you tell Grace Allen as to amount of syrup equivalent to a pound of honey sealed in the comb. I thought that was pretty well settled some time ago. Up here 5/7 of a pound of sugar will not equal a pound of sealed honey, and a general average of experiments has shown us that it takes a full pound of sugar made into syrup to give the bees the equivalent of a pound of honey. This is for winter stores. I have no data, and know of no way of obtaining any to test the matter for any other season of the year. [See Dr. Miller's second "straw," this issue.—Ed.]

Here in this part of Ontario we have had a nice moderate winter to date, Jan. 10, with but little snow. As beekeepers, if we were looking for any cause to complain, the lack of snow would be the only thing offering for an excuse, as we have had no extreme cold yet, and bees appear to be wintering nicely. During the next four weeks we are apt to have our very cold weather; and during that period we like to see a good blanket of the "beautiful" over the clover and around the hives. For our latitude, abundance of snow is a normal condition for our winter season. When we lack this covering of nature, something is bound to suffer more or less.

For a long time I have been of the opinion that Wesley Foster was a pretty good sort of chap, altho I never have had the pleasure of meeting him. Just at present I have a much higher opinion of him than I have ever had before just because I read that letter from his honored father on page 1044, Dec. 15, relative to the question of taking human life, even as a matter of self-defense. The sentiments expressed in that letter are exactly the views held by myself, and I never have been able to reconcile the teachings of Jesus Christ as given in the Sermon on the Mount and in many other places with the view taken by thousands of his professed followers, that under certain conditions we may kill our fellow-men.

While on this topic I wish to give my hearty approval of an extract from the sermon printed on page 1043, relative to the claim made by some that the present war shows the collapse of Christianity. "It

is not the collapse of the Christianity that Jesus taught, but it is the collapse of the Christianity that the church has taught."

In the matter of advertising honey, and especially in getting it placed in high-class hotels and other like places, I called the attention a short time ago to the fact that honey is not popular because so many people actually do not know how to handle honey at the table. Just a short time ago I was talking to the manager of one of our best hotels in Toronto, and he mentioned this matter, saying that honey would be unpopular in the high-class hotels until some plan could be devised to give an individual service. At present nearly all preserves, jams, etc., as well as the soft varieties of cheese, are served in this manner, small jars with large necks being used, the manufacturers of the different foods putting it up at their factories. It seems to me that the cost of putting up honey in this way would be prohibitive for hotel use, altho it could, no doubt, be arranged for dining-car service where such high prices are charged the patrons. It is a problem worth investigating, for one who travels much knows that very few menus of our good hotels include honey.

RABBIT SPACING.

As the editor says on page 1098, self-spacing by hive-rabbits was tried many years ago. One of the first movable-frame hives sold here in Ontario, and called the "Thomas" hive, had this feature. But very few are in use today by the large producers. A notable exception to this, however, was the late Wm. McEvoy, who, if I am correct, used rabbits for self-spacing, and doubtless his sons who now run the business use the same style of hive. Judging by all the hives of this pattern that I came across while at inspection work, there would not be much danger of the frames jumping out of these rabbits of the hives if they were being moved, as they were mostly glued good and tight with propolis. But this would not be the case in Mr. McEvoy's apiaries, as they are very particular in their beework, and all excess of propolis would be removed. From the fact that so good an apiarist as Mr. McEvoy used these hives altogether, perhaps the principle of rabbit spacing has some virtues that have been overlooked by others who have tried them.

BEEKEEPING AMONG THE ROCKIES

Wesley Foster, Boulder, Colorado



WINTERING AND PROSPECTS.

Nineteen fifteen ended up with a precipitation above normal of nearly four inches. The mountains are well supplied with fallen snow, and prospects are good for sufficient moisture for the coming year.

Alfalfa is in excellent condition, and sweet clover is unusually abundant and thrifty.

The bees so far have wintered well, considering the amount of poorly ripened honey in the hives. They gathered honey clear into November; and as this honey could not be thoroly ripened, it is likely to cause trouble later on.

THE NATIONAL CONVENTION.

The beekeepers who attend the National convention in Chicago will be assured of a rare treat. Problems of national importance will be handled. There will not be the detailed business to be transacted this year so common in years past. We should have a feast of good things. Prof. Jager (it is hoped) will show us how to clean sections. Mr. R. A. Burnett will discuss the comb-honey situation from the dealer's standpoint. Editors Root, Dadant, and Townsend will discuss subjects they are expert in. We shall have the commercial aspects of beekeeping well represented.

There will be much valuable discussion, and we will have a banquet.

The Hotel Sherman, Chicago, is the place where our convention will be held, and a live convention is assured.

Come, and contribute your bit to the convention.

IDAHO WINTERING EXPERIMENTS.

Mr. Jos. J. Anderson's wintering experiments as described by him (page 1016, Dec. 15) are very interesting and instructive. A few things might be said in this connection that will add more light to the subject. In a footnote to Mr. Anderson's article Editor Root mentions that Idaho weather is similar to that of Ohio, but that the climate is drier. I take it that Idaho has about the same snowfall and cold weather, but a drier climate than Ohio. If this is the case, as seems true, Idaho has a damper winter than Colorado, Wyoming, Utah, Nevada, and Arizona. From my observation, dampness is far more fatal to bees than cold. This applies whether the cold is external to the hive or inside of it.

One thing that would be interesting to know is what the loss would have been had Mr. Anderson wintered one hundred of his

colonies on their summer stands with no protection. Mr. Anderson says, "With young and vigorous queens, a hive full of young bees, and ample stores, the battle is half won." Give me these conditions in Colorado, and the wintering battle is ninety-five per cent won. This subject is of intense interest to me personally, as I am wintering nine hundred colonies in Idaho for their first winter. They are packed in straw, except the fronts, and the straw is covered over with tar paper to keep out the snow and moisture. Eight hundred colonies of mine are wintering in Colorado with no protection whatever. Colorado and Idaho are different.

SPRAYING AND BEEKEEPING.

The spraying of fruit-trees and the alleged destruction of bees is a complex subject. In no case where investigations and experiments have been carried on has the work been sufficiently thoro to get at any tangible results. In California, the published results of experiments there performed are at once convincing to those who have passed thru spraying troubles, that the experiments did not duplicate the proper conditions. The published facts regarding the experiments in Australia (page 994, Dec. 1, 1915) are so very meager that it is surprising scientific investigators would attach any importance to them. The number of colonies is not stated, the acreage in bloom within two miles of the apiary in relation to the acreage sprayed is not given, and doubtless was not even considered. The information given is so very meager that such conclusions are valueless. Those of us who have lived in commercial-fruit districts and seen thousands of colonies destroyed in the thousands of acres of orchards, cover crops growing under every acre of trees (almost), realize the importance of this subject. We have seen thousands of colonies saved by being moved two and a half to three miles from the orchards. Honey crops have been saved by moving. It is so well established among hundreds of our Colorado beekeepers that bees cannot exist in commercial-fruit districts that a man who does not move his bees when spraying begins is placed in the same class with the man who allows foul brood to destroy his colonies when he knows how to cure the disease. And another thing, our experiment-station men are not trying to prove a self-evident condition false by a few half-planned, poorly conducted experiments.

BEEKEEPING IN CALIFORNIA

P. C. Chadwick, Redlands, Cal.



MEETING OF THE CALIFORNIA STATE BEEKEEPERS' ASSOCIATION.

A meeting of the California State Beekeepers' Association was held at the Y. M. C. A. building in Los Angeles, December 28, 29.

The question of whether it was the regular annual meeting or a "called" meeting remains undecided, there being a conflict of opinion on that point. This will be anything but a full report; for to give a full report with the feelings engendered would offend some who are now prominent in the work, tho to follow the usual course and say all was peace and enthusiasm would be handling the truth somewhat ruthlessly. To follow the undercurrents would make a report bristling with things not pertaining altogether to beekeeping. So I will confine my report to the proceedings as nearly as possible as shown on the surface, for the benefit of the great majority of beekeepers who were not present.

The meeting was called to order by Prof. Willis Lynch.

An invocation was offered by Mr. Albert Miller, of the Y. M. C. A.

After the address of welcome and response, the business of the meeting was called for. Here the first fire was drawn. President-elect W. H. Allen took the ground that no business could be presented, the regular annual meeting having been held in San Francisco in August, and that no business should now be transacted. The chair ruled against this contention; an appeal was made to the house, the house sustaining the chair. The program was then resumed.

The secretary's report was read and accepted.

Delegates from county clubs made reports, county inspectors following. Inspectors' reports were favorable, showing disease well under control, improved conditions prevailing in most sections.

"Possibilities of foreign markets" by Hon. S. S. Knabenshue (former consul-general to Ireland and China), was then heard. Mr. Knabenshue gave a fine talk.

The different strains of resistant stock, by Prof. Geo. A. Coleman, of the State University, was then heard. The best part of this was the announcement that the University had acquired the use of an island several miles out in San Francisco Bay on which the establishment of a bee hospital is to be undertaken, the object being to study disease, its cure, test disease-resisting strains, and make a study in general of the

bee with an idea of assisting the industry, keeping careful records of all experiments, and compiling valuable data for the future.

Practical wax-rendering by T. O. Andrews was interesting and instructive.

M. C. Richter gave a paper on marketing, giving a volume of export figures, which was altogether an instructive paper.

The exhibit committee thru Prof. Willis Lynch made a detailed report, which showed that, outside of donations from Stanislaus County and the A. I. Root Co., the exhibit might be better known as a private exhibit of Prof. Lynch rather than an association affair. An indebtedness of nearly \$1100 was shown. There had been some opposition to assuming this indebtedness, a resolution having already been passed to disclaim any expense of an exhibit. Prof. Lynch presented his report in a manner that showed that, to disclaim the expense after the secretary had admitted that Prof. Lynch had been told to go ahead with the exhibit, meant the repudiation of debt by the association. The report was finally accepted by a vote, after which Prof. Lynch, in one of the fairest talks ever heard in an association meeting, agreed to accept \$212 as payment in full, this amount representing the actual cash paid out of his personal funds into the exhibit, but not the expense of travel, five months' time of his son in charge of the exhibit, and numerous smaller considerations.

"The Western Honey Bee; Its Fraternal Status and Its Financial Straits" was the topic of the editor, J. D. Bixby. His report, while showing the journal at a point where it might be expected to pay its way in the future, still showed an indebtedness of \$214 printers' bill and \$199.90 editor's salary. Inasmuch as the editor had tendered a conditional resignation, making it obligatory on the association to provide funds to continue the paper or accept his resignation, some way must be found to finance the journal or cease its publication. The Consolidated Honey-producers of California agreed to take the paper over and assume all indebtedness. In the future the State Association will not own or publish a journal, but the *Western Honey Bee* will remain the official organ of the association.

The farewell address of President Lynch virtually closed the business of the meeting; and while many dangerous points had been faced that seemed would cause a rupture, all ended in harmony and good will, save, to be sure, some mental reservations.

CONVERSATIONS WITH DOOLITTLE

At Borodino, New York.



LIQUEFYING GRANULATED HONEY.

"The honey I extracted last summer is all candied hard; and while some of my customers seem to like it that way, the majority of them prefer it in the liquid form. Please tell me the required heat, and how to proceed."

The recipe which was given me some thirty years ago, at about the time extracted honey came before the public, was this: "Set the vessel containing candied honey on the back part of the stove where it is a little warmer than you can comfortably hold the hand, allowing it to remain there till the honey is all liquefied." With only a small quantity, this answers very well unless you forget all about the honey, build a big fire, and allow it to stay there till it reaches the boiling-point or nearly so. Where this is done, the honey not only changes color but the flavor is also very much impaired, especially for one who likes the delicate flavor contained in nice clover or basswood honey. Too much heat is always injurious, both as to color and flavor. We may consider 212° F. as the boiling-point of water; but honey brought to that degree of heat would be ruined; and therefore it is not safe to set granulated honey on the stove-top or its oven if the honey is to be marketed, since such heat is an unknown quantity. Moreover, the bottom of the honey in any receptacle where liquefied by dry heat may go above 212 degrees while the top is still in the candied form. For this reason I would not advise the novice to try the dry-heat plan save for a small amount used at home.

What is called here the "wet plan" is generally preferable for all purposes. This plan generally calls for the "wash-boiler," tho any open dish of suitable size is good. Some put pieces of brick or iron in on the bottom of the boiler to set the vessels containing the candied honey on; but those claiming to know say that wooden strips crowded in so they will not float are preferable, as such will not convey the heat to any part of the honey more rapidly than will the water in the heating-up process.

Having the strips fitted in, the vessel of honey is to be set on these, and cold water poured in by means of a long-spouted funnel till the water comes up around the vessels as far as the honey is inside. It is important that the heating be gradual, for the reason that the process of melting can-

did honey must be rather slow, as it is a poor conductor of heat. If the heating is rapid, that at the sides of the containing vessel would be melted and might be injured before that at the center was little more than warmed. This would be especially true if the vessel were of considerable size. If thru rapid heating the temperature at the sides of such a vessel goes above the highest point of safety, and is maintained at that point until the honey is all reduced, damage is likely to occur, altho the temperature at the center of the mass of honey may have hardly approximated the danger-point. I generally take from three to three and a half hours in bringing the honey to a temperature of 135 degrees, and rarely allow it to get above 150. An oil-stove is preferable to either wood or coal in that the flame can be rased or lowered at will, and thus a temperature of from 140 to 145 be kept as long as it is desired to have every part of the honey reach the same temperature. Basswood and clover honey readily liquefy, and become as clear as when first extracted, at a temperature of 145; but I am told that other honeys, like alfalfa, seem to need a higher temperature to bring them back to their original clear and limpid condition, at least a temperature of 160 being needed.

I find that an injury begins with clover and basswood honeys if they are allowed to stay any length of time much above 165; but as these honeys liquefy readily at a temperature of 135 to 145 the difference between the melting-point and the danger-point is so wide that there is no necessity for running any risk.

Some claim that if honey is put in glass cans and sealed up while hot it will not granulate again, and by this claim many a lot of honey has been injured, both in flavor and color, in that the term "hot" conveys to the average mind near or quite the boiling-point. True, if honey is brought to or above 212 degrees it will rarely granulate again; but the price of such honey will depreciate from one-fourth to no sale at all with most consumers of extracted honey, to say nothing of the injury which comes to the market by putting such before the people. I find that any honey which is liable to granulate will granulate again if only heated so as to liquefy it; but it does not granulate quite as quickly after heating as it did at first nor as quickly after each heating as it did after the one before.

GENERAL CORRESPONDENCE

EXTENSION WORK IN APICULTURE AT THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION

BY PROF. GEO. A. COLEMAN, UNIVERSITY OF CALIFORNIA

Perhaps there is no one subject in all the realm of nature-study upon which the general public so much needs enlightenment as that of the habits, natural history, and anatomy of the honeybee. This is especially true when we consider the very close relationship existing between the bees and the agricultural and horticultural interests of man.

That there is a surprising lack of knowledge of even the most common facts now known in regard to the development of the workers, drones, and queen; and the general economy of the hive, may seem surprising, considering the number of journals devoted to apiculture, and the number of books published in which these topics are discussed. You would not doubt this, however, if you had to find answers for the thousand and one questions which the author has had propounded to him during the past eight months by people who really ought to know better. The most surprising thing to them seems to be that the bees are actually able to go out from the hive, gather the nectar and pollen from the flowers on the exposition grounds, and return to their own domicile without getting lost. As one lady expressed it, "Why, I should think you would be afraid you would lose them all;" and another, "Oh! you don't mean to say that they really go outside of this building and find their way back thru that tiny hole in the wall?" and when assured that such was the case, "Why, how really wonderful!" Then every one, adults and children, even the babies, are always anxious to have the queen pointed out to them; and on the rare occasions when her royal personage permits the operation of egg-laying to be witnessed, the favored few who witness it are simply entranced. The drone is usually taken as a huge joke, and becomes at once the butt of ridicule. The many operations of the workers in wax-secretion, cell-building, caring for the young, gathering and storing of the nectar and pollen, when explained, become so absorbing to a great many that they come around every time they visit the grounds "just to see how the bees are getting on."

Realizing that the Panama-Pacific exposition would offer exceptional opportunities for an exhibit of this kind, and for instruc-

tion in the matter of handling bees in the schoolroom as well as in the apiary, the author planned and has carried on successfully during the entire exposition period an exhibit, accompanied by demonstrations and lectures, which I believe is unique of its kind. It may be interesting, therefore, for you to know something about the manner of arranging this exhibit, apparatus used, and the results.

The "Observation Beehive Exhibit," as it is known in the catalog of the Panama-Pacific exposition, was organized primarily for the purpose of instructing the general public, and particularly teachers in the public schools, as well as pupils, concerning the habits, natural history, and methods of handling the honeybee.

The exhibit was placed in the Palace of Education, on floor space adjoining an outside wall, and occupied a space of 12x20 feet. The space next the wall, and extending out six feet, was divided up into three compartments, 5 x 6 ft. by 9 feet high, and a small office, which were enclosed separately with wire screen to confine the bees when they were being placed in the observation hives, or manipulated in any way. The space outside these wire cages was occupied by a table two feet wide by ten feet in length, upon which was placed all the best books, journals, circulars, and bulletins on apiculture, all wired down so they could not be misplaced but could be readily consulted. The exhibit also included a modern hive for comb-honey production complete, all the apparatus for the extraction of honey and wax, including an A. I. Root automatic reversible extractor, and all of the small apparatus and tools necessary in a modern apiary. On wall space at the end were placed two large charts illustrating, by means of paper models and drawings, bulletins of the United States Department, the anatomy of the queen, drone, and worker, the manner of secreting wax, collecting pollen, etc.—also some models of the honeybee, done in "modelen" by the pupils in the second grade of the LeConte Public School in Berkeley, which were particularly good.

The special feature of the exhibit, however, were the observation hives containing the live bees at work. There were three of

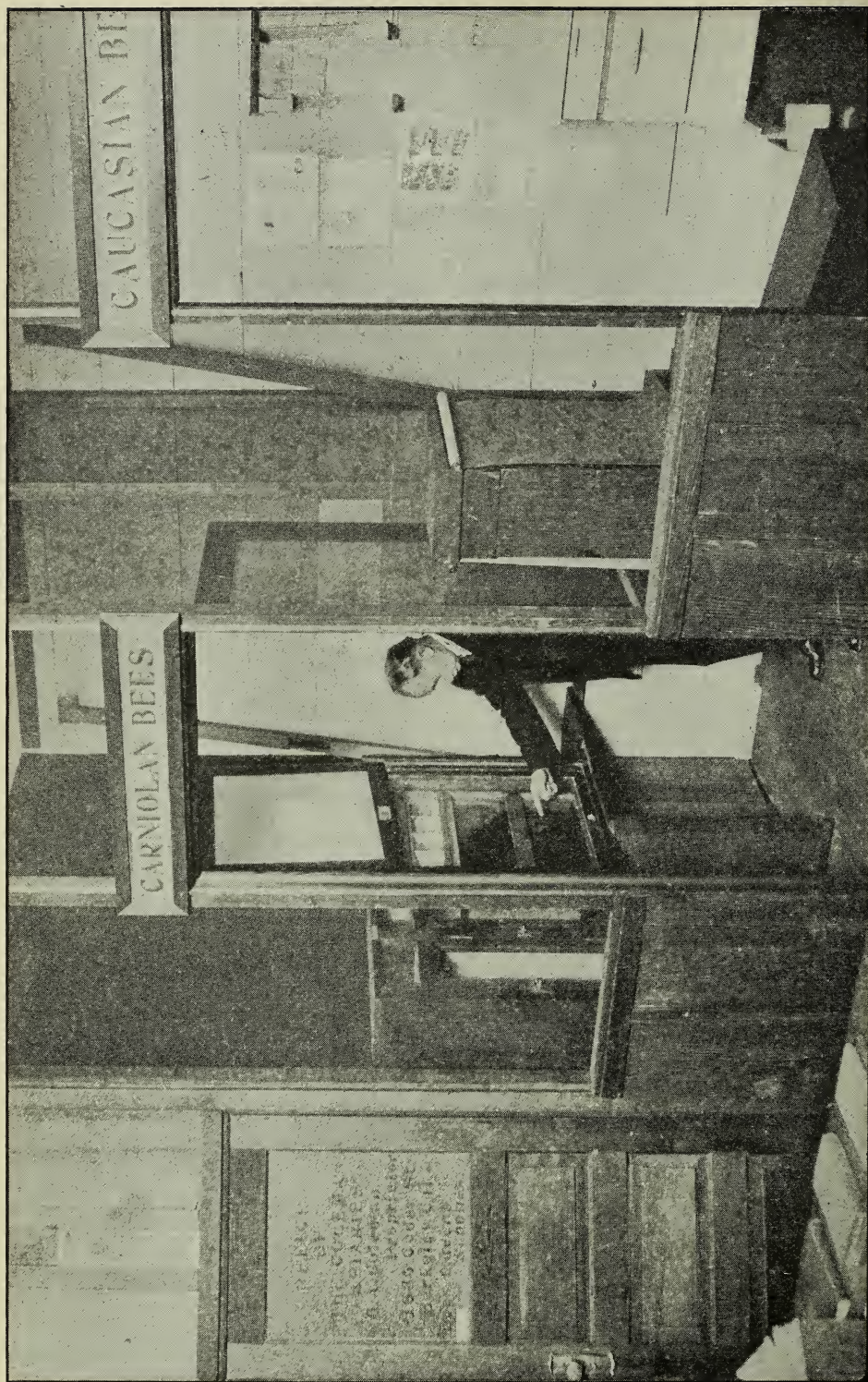


Exhibit of observation hives at the Panama-Pacific Exposition, in charge of Prof. Geo. A. Coleman. Note that the bees have to travel thru long tubes to reach the outside.

these hives, two of my own design and construction, and one of the eight-frame Root observation hives, one being placed in each of the three compartments, and containing respectively colonies of each of the three standard races—Carniolan, Caucasian, and Italian, in order to illustrate the characteristics and markings of each of these races of bees. These colonies were placed in the hives in April, and supported themselves thruout the exposition period of eight months, with no feeding except a very little at the beginning. The manner of connecting the hives with the wall and outside is very interesting as showing what bees will do when necessary. In order to have their entrance raised above the heads of the people entering one of the main doors of the building which was just adjoining the exhibit, it was necessary to place the entrance holes in the wall ten feet above the ground, leaving a distance of some seven feet between the hives and the wall entrance on the inside. This distance was bridged, and connection with the hive and wall entrance made by the use of wooden tubes, one by three inches in diameter by eight feet or more in length, and placed at an elevation of 75 to 85 degrees, with glass slides for observation placed at a distance of about three feet from the hive entrance. I have found no trouble in this arrangement, the bees going and coming thru this long tube as a matter of course, and removing dead bees and other debris from the bottom of the hive, carrying it all out thru the long tube to the outside. These hives were left open for observation for six to eight hours daily, after gradually getting them used to the light, which troubled them slightly at first, by leaving them open a short time every day at the beginning until they became so accustomed to the light that it did not seem to interfere with their work in the least.

This, I believe, is largely a departure from the methods of conducting exhibits at former expositions and many fairs, where they have consisted mainly of spectacular demonstrations of handling the bees with the naked hands, having them cluster on the naked skin, etc.—a method which has justly been condemned because it has caused trouble on several occasions, and at best gives people a wrong impression of the real habits of the bees and of the proper precautions to be taken in handling them. It has resulted, also, in a distinct antagonism on the part of exposition officials against such exhibits. For this reason the officials of the Panama-Pacific exposition at first refused permission to allow live bees

to be placed in the exhibit—even the director of exhibits, Mr. F. J. V. Skiff, expressing his disapproval of the plan, making it necessary to do a little missionary work and instruct the said officials, and, indeed, the entire board of directors, in the ways of the humble honeybee before the proper permission could be obtained. I count it, therefore, as one of the greatest victories won by this exhibit, that, thru the entire exposition period, there has not been one complaint from visitors or officials as to any annoyance from the bees, and they have had the entire freedom of the grounds, flying within a few feet of hundreds of people daily, including the throwing of four swarms which were duly hived in the most approved manner in the presence of the admiring multitudes. It also demonstrates the fact that the bees can be placed in the schoolroom, as also the exact manner of doing it, and kept there constantly under observation without any danger of annoyance to teachers or pupils, allowing the children to study their habits daily under normal conditions of non-excitement, a condition in which they are much more likely to retain the facts they learn than when they are under the nervous strain of something very startling. This fact has been abundantly demonstrated by the daily visits of hundreds of schoolchildren at the exhibit, and by their manifesting the most intense interest while there.

In connection with the exhibit, I have, since the first of April, given weekly lectures illustrated with a large number of stereopticon slides, of an hour's duration, on Saturday afternoons, in the Palace of Education Theater No. 1, consisting of a series of four lectures as follows: The Natural History and Anatomy of the Honeybee; The Handling of Bees; The Management of an Apiary; The Composition and Uses of Honey and Beeswax.

The attendance and interest manifested in these lectures was very gratifying. Starting with a handful of people, the attendance rapidly increased until I had the theater, which seats 150 people, packed, some standing in all the aisles and on the platform at every lecture. In this way I reached many thousand people.

The attendance at the exhibit was steady from the beginning, and counts made at different times showed an average of about fifty people per hour thru the busy hours of the day, which would mean several hundred every day, and many thousands for the entire exposition period. On the days when the schoolchildren visited the grounds we were simply overrun.

The exhibit was run entirely with volunteer help, consisting of students who were taking our course in apiculture at the university, and other people interested in the study of bees. Mr. A. C. Earl, a real-estate man, but a lover of bees, gave three half-days a week to it. Mr. E. H. Mosher, Principal of Emerson Public School in Berkeley, devoted considerable time to it simply because he was interested from the schoolroom point of view, and was much pleased with the results. Among those especially interested, I may also mention Mr. Augustus Downing, Assistant Commissioner of Education in the State of New York, who has expressed himself to me as very desirous of introducing the system into the

public schools of New York. The exhibit was also visited by many of the prominent beekeepers of the United States and other countries, all expressing themselves as much pleased with it. Mr. E. R. Root, editor of *GLEANINGS*, has taken a special interest in it, and my thanks are due him for kindly assistance in connection with it.

The exhibit has also afforded a good opportunity for handing out literature regarding our courses in apiculture, bulletins, etc., and of securing a large list of names and addresses of people interested in bees.

The exhibit was awarded a gold medal by the International Jury of Awards.

[See editorial comment elsewhere.]

A NEW CURE FOR EUROPEAN FOUL BROOD

BY TIMBERLINE RIGGS

In attempting to treat any disease one must first understand as fully as possible the nature and cause of the trouble itself. Without taking up too much space I shall, therefore, give a few of my views concerning European foul brood. If necessary I believe I can find facts to support these views.

Very near all of us have some theory or belief as to the method by which European foul brood spreads in a yard. I believe the most common theory, and the one which to me seemed most reasonable, is that it is communicated mainly by drifting nurse bees, the infection being contained in the food they prepare for the brood. As I understand the disease, in an infected apiary practically every colony is continually exposed to infection—of course to a greater or less extent, those with the most vitality being able to withstand it, and those with insufficient strength contracting the disease. The fact that many colonies, particularly the strong ones, are able to clean up European foul brood without any treatment would seem to support this.

In order for the disease to get a start, our bees must in some manner become weakened in vitality. Of course some stocks are naturally of low vitality; but any stock may become weakened temporarily. A knowledge of European foul brood and the habits of the honeybee, I believe, give us the following facts:

In the spring, colonies come out of the winter weak in numbers, and depleted in stores and vitality—in fact, at about the lowest ebb of the season. Nature at this time supplies them with the instinct for

brood-rearing, possibly, more strongly than at any other time. Under this impulse the bees raise all the brood they possibly can gather stores for, keep warm, and take care of, spreading themselves to the absolute limit of their brood-rearing capacity, of course the weather compelling them to keep no larger brood-nest than they can keep warm. With a very large brood-nest, such as is supplied in modern apiaries, almost invariably this period of brood-rearing must last longer than with a smaller breeding-room.

At this time it is quite reasonable to suppose that the bees do not feed their brood a bit more lavishly than is absolutely necessary. The honeybee is extremely provident and economical except in times of prosperity. With all the brood they can care for, and in a slight dearth of pollen or nectar, it is quite possible a lot of brood does not get all it really needs for its best development. This, it seems to me, *must* result in lowered vitality. We get inferior development and vitality in any of our domestic or other animals if neglected as to food or other necessities at any time during the period of its growth, and my experience tells me it is the same with bees.

Coincidentally you will find that it is at practically this very time that European foul brood does its worst damage. You will also find that increase or any weak colony at any period when the bees are spreading their brood as much as possible is quite subject to the disease. A colony that has reached its capacity for brood-rearing when there is an abundance of nurse-bees to take care of the brood seldom shows the disease

unless there is very little food coming in, when they are just as liable to starve their brood as a weaker colony. In my experience strong colonies never succumb to the disease when there is plenty of food coming in.

I have never heard of a case of European foul brood found in bees taken from trees. Has any one else? Yet these same bees transferred into a modern roomy hive in an infected locality quickly contract the disease. Bees in a tree, left to their own devices, generally have quite a small brood-nest; for if the cavity is large, surplus room is quickly taken up with surplus stores, and in the spring there is seldom more room than that supplied by winter consumption. As a consequence the period of extensive brood-rearing is much shorter, and the bees reach the swarming condition earlier. In other words, the chance of any brood being neglected is reduced to a minimum. How else can the immunity to European foul brood found in trees be explained than that they do not get a chance to spread their brood like other bees, resulting in more or less partial starvation and weakened vitality?

My explanation of my method of treatment of this disease is quite simple; but before giving it I wish to state that I do not claim that it is a proven cure or even proven experience to hold good in all localities and under all conditions. With my bees and local conditions it works so well that I consider it a cure. However, I have never handled black bees, nor have I ever experienced in my apiary European foul brood in its most virulent form, nor do I believe any one is liable to with good Italian bees. Possibly my method may not work with black bees or a different locality. I should hate to try to cure it with poor bees. The experience of others may contradict rather than support this article. I give it for what it is worth.

SIMPLY CROWD THEM!

Now for the cure: In the treatment of a colony or nucleus, no matter of what strength, take away every bit of room the bees are not fully occupying, or a little more, and then contract the hive down till the bees are *crowded*, using a division-board if necessary. They must not have unoccupied room if they are reduced to even one comb. If nectar is coming in, that's all that is necessary. If it is not, apply a stimulative feeder. I have not found it necessary to dequeen, altho if the case is bad it is liable to be because the stock is poor, and for this reason I would requeen the worst cases.

Their only fault may be an overtendency to spread brood.

In swarming time this is liable to result in swarming. Frankly, I do not use it much at this time, but unite all of the worst cases, making rousing colonies of them, dequeen, and feed as by the usual method of treating disease. However, with me I consider this treatment almost an annihilation of my investment, and only the worst cases are so treated—not as a cure, but to prevent the spread of the disease. However, I have very few bad cases—almost none in which the disease would overcome the bees if I cared to let them wait before treating. I must, however, admit that spring months in this locality are much more favorable than in most. Prior to swarming time, and while colonies are not yet strong, they may be more or less crowded, if necessary. In deciding whether a colony will stand this treatment, there is room for quite a bit of judgment and knowledge of the humor of bees and what they will probably do.

Sooner or later bees treated by this method will require more room. Do not give a colony super room until it can occupy and have use for it; and in giving nuclei additional brood-nest, never use drawn combs. Use full sheets of foundation and put it on the outside, at least with diseased nuclei, never spreading the brood. Your nuclei, you will find, will build up almost or quite as fast in the long run as if you had given them abundance of room.

In regard to brood-spreading, to me it has always seemed that bees do best where they were not given too much room, and they seem to make the room themselves just as soon as they really need it. I have never yet practiced brood-spreading where I knew that I derived any benefit from it. On the other hand, many times I know it has cost me money. There may be times when there is a profit in it, but I do not know when it is. Most beginners always make the mistake of giving too much room to their bees, and simply tingle with a burning desire to spread brood as soon as there is any to spread. I believe this is the most common and costly mistake beginners make, for verily it keeps the bees in a state of absolute discouragement and demoralization.

Of course, where one or two men are looking after six or eight yards of 500 to 1000 colonies of bees one occasionally has to give more room than the bees really ought to have, for in this case the item of labor is supposed to counterbalance any loss of crops. But where proper attention can be spared, I consider the giving of room



Algoroba-trees growing on the lowlands near the sea, on the lee shore of the Island of Oahu.

one of the fine points of judgment in the ordinary apiary manipulations.

Here is another thing I have found out: The strain of bees themselves is at least half the battle with European foul brood, for quite frequently a good Italian stock will clean it up of their own accord. I much prefer the leather-colored Italians, for I have noticed that the yellowest bees

are often most subject to disease. This crowding of brood, forcing the bees to feed and care for the larvæ more lavishly, is, of course, given only as treatment for European foul brood. I know of nothing but starvation, shaking, and destruction of combs for the treatment of American foul brood, altho for me it has very few terrors.

Overton, Nev. [See editorial.]

HONEY-PLANTS ON THE ISLAND OF OAHU, AS SEEN BY A MALIHINI

BY LESLIE BURR

There is but one honey-plant on the island of Oahu—that is, but one worthy of the name. There are numerous plants that yield honey. Some of them yield profusely, but they do not count in the crop. When the royal palm is in bloom it is alive with bees; but the royal palm blossoms only once or twice during the year, and each tree has its own individual time for blooming. Besides, it is planted only as an ornament, and is found only where planted, and that is principally in the city of Honolulu. That lantana grows everywhere—that is, when given an opportunity. It yields some nectar.

Then there are cocoanuts, dates, and other palms that yield some honey whenever they happen to be in bloom. Sugar-cane, when attacked by the cane-borers, secretes juice very copiously, and the bees step in and keep it from going to waste. Millions of dollars have been lost to the cane-planters of the islands by reason of the cane-borer, and the beekeeper seems to have been the only person to profit. This cane-juice honey is not an article that can be placed on the market for home consumption—not even if it is sought for by the bakers. In the past, prior to the war in Europe, it went to Ger-

many. That gathered last season by reason of the war still remains unsold. It is at the present time in storage, and will probably remain there until the end of the war.

The only real honest-to-goodness honey, worthy of the name, is that gathered from the algaroba-tree. The native name is "kiawa." In the United States, along the Mexican border, it is called "mesquite;" in the Spanish countries it is called "algaroba;" and the botanical name is *Prosopis juliflora*.

The first algaroba was brought to the Hawaiian Islands by father Bachelot in 1826. He was given the seed at the Royal Gardens in Paris. The seed was given to him there with the seeds of several other plants—several that were thought suited to the conditions existing in the islands. It is not known just how the seed got to Paris; but the supposition is that it came from South America. From the original seed brought by father Bachelot there is still one tree alive. It stands on Fort Street of Honolulu.

Of all the trees on the island, the algaroba is considered the most valuable. Following its introduction it spread like wild-fire, and thrived under every condition it met. And there are many conditions that exist in but few places. At one place the annual rainfall may be over a hundred inches, while at a distance of a few miles the fall will average but a few inches. The cause of this varied rainfall is the mountains, which have the effect of spilling the rain out of the atmosphere, causing it to precipitate near the mountain-peaks.

Stock was the agent that distributed the

seed. Cattle are very fond of the seed-pods; and since the introduction of the algaroba the pods have been one of the principal stock foods. The seeds, however, are very hard, and are not digested unless they have been ground, and so were distributed. Wherever the seeds were dropped they grew as readily as any weed. Low land, whether wet or dry, seemed to be exactly suited to the algaroba. In fact, any kind of land on which a tree could grow seemed to be all that was asked. In some places they grow in dense thickets, in other places they are tall trees over three feet in diameter. Every piece of land on which it is possible for a tree to grow, if not dominated by the hand of man, is dominated by the algaroba.

The trees reach a height of fifty feet; have small pale-yellow flowers in cylindrical spikes, abruptly bi-pinnated leaves, having from six to thirty pairs of leaflets. The pods are gray, sickle-shaped, and from five to seven inches long. The trunks of the trees are not, as a rule, well formed, being either crooked or gnarled; but the foliage is beautiful. The wood is the best fuel to be found on the island; and as the growth of the tree is rapid it is possible to grow it for that purpose. The wood is used for other purposes than fuel, being very hard, with a beautiful color and grain.

The algaroba blooms during the summer months; yields nectar in a copious manner, which is of good flavor, color, and body; and it is the only good surplus honey obtained on the island.

Honolulu, T. H.

AS GLIMPSED THRU THE CAMERA

Some Common and Uncommon Sightings among the Bees

BY H. H. ROOT

Every season we get a lot of reports from beginners, telling of the bees of some colonies being very large while those of other colonies are small. Frequently we receive samples of large and small bees. Of course, there is sometimes a difference in the size of bees in different colonies. But in the great majority of instances the difference in the size of the workers is due to the difference in the size of the abdomen, depending upon whether they are distended or contracted. Bees that have been feeding heavily, or those whose abdomens are swollen because of an overcharged condition of the intestines, look very different from

other bees whose blunt contracted appearance makes them look very much smaller.

The first illustration shows two worker bees, both of which are distended, the one at the left rather more than the one at the right. Altho both looked large there was an actual difference of about 1/16 of an inch in their length.

The second illustration shows a worker bee with a distended abdomen, then a worker with a contracted abdomen, and, last, an old shiny bee—from all appearances a robber. These bees were all taken from the same colony at the same time. So far as head, legs, and thorax were concerned they



Two bees with distended abdomens, making them look large, almost like a queen. Photographed on Seed 23 plate; time, one minute.

were substantially the same size; but the difference in the entire length, including the abdomen, was very marked indeed. The black shiny bee at the right looks more like a diminutive drone than worker on account of the round blunt appearance of the abdomen. The bee itself, however, did not look quite so blunt as represented by the photograph, for the tip of the abdomen was turned down somewhat so that it did not show plainly.

SOME INTERESTING MALFORMATIONS.

In one hive we found several very curious-looking bees running about on the alighting-board. They were not making any attempt to fly, especially the one in particular which had no wings. The illus-

tration shows three cripples that were alive and apparently well when found. How long they would have been permitted to remain in the hive is hard to say. Some of them were so badly twisted that they had to turn around and look backward when they wanted to walk ahead.

There were no moths in the hive, no burrowing-moth larvæ thru the combs—nothing of the kind could be found to have mutilated the bees. We found these bees, however, just after a cold rainy spell when the sun and clouds seemed to be quarreling to see which could be boss the longer. The temperature, moreover, was alternately hot and cold. Perhaps the rather peculiar and unsettled conditions caused the queen to start more brood than the nurse bees could



Different sizes of worker bees from the same colony. Note that the abdomen of the first bee is longer than the wings, while that of the second bee is shorter than the wings. The third bee was an old shiny one—perhaps a robber. Photographed on Seed 23 plate; time, one minute.



Some curious examples of malformation. These bees were alive when found, running about the hive as cheerfully as any bees. Note that none of them have a full outfit of wings, and all of them are badly twisted and deformed.

care for, so that some of the brood was badly neglected—at any rate, the bee in the center, for instance, which, instead of having four wings, had only about half of one. It did not have the appearance of having had even the stub of the three other wings. It seemed to have matured without them. Perhaps a sudden turn in the weather arrested development, even tho these bees in the larval stage might have been well supplied with food.

The bees in these illustrations were not photographed alive, but were killed first by being placed under water for fifteen or twenty minutes, and then dried and sub-

jected to the fumes of hydrocyanic gas for about ten minutes. I have tried many ways of killing bees, but none that result so well as this plan. Bees kept under water even for several hours often have an annoying habit of coming to life again and crawling about just when you are ready to photograph them. If they are left under water ten or twelve hours they "stay dead;" but, strangely enough, they take on a rather water-soaked appearance in spite of all that can be done. If they are placed in the gas alive they curl up and get into such unnatural positions that it is impossible to make them look lifelike.

THE DISTRESS (OR SMOKE) METHOD OF INTRODUCING; WHY MEN FAIL

BY ARTHUR C. MILLER

The following letter introduces the article:

"I follow Mr. Miller's method up to letting the queen run in at the entrance. Previous to smoking, a regular bee-escape board is placed over the cone to receive the queen. The colony, of course, is in one hive-body. Then I proceed to smoke *a la* Miller. Perhaps I had better say this bee-escape board is made air-tight. A tight-fitting plug (a block with a larger piece of tin nailed on to it) is inserted in the hole and all weighted down.

"I had a small flat wire cage, $1\frac{1}{2} \times 1\frac{3}{8}$ inches, which is open at one end. Into this I put the queen. I think that, if the queen is put into this cage without any attendants for twenty to thirty minutes previous to introducing, it will add the excellent features of the starvation method.

"Remove the plug from the bee-escape. Send in a good puff or two of smoke. Put the caged queen into this hole on the top

of the frames and close up the hole. In ten minutes give a small entrance (one inch); an hour or so later, the full entrance.

"Mr. Miller says the frames should be $\frac{7}{8}$ inch above the bottom-board (page 370, 1913). While I believe this is necessary to distribute the smoke, I believe it is almost equal to the mistake he cites on page 511, July 1, 1914, of introducing the queen to a full-sized hive, and not filling up the empty space to prevent the queen wandering into it. If the queen goes directly on to frames, well and good; if not, I believe there will be trouble. Hence this method of putting the queen directly on top of the frames."

St. Louis, Mo.

J. H. FISBECK.

Mr. Fisbeck's use of an escape-board in queen introduction is a very convenient arrangement, and has been used by quite a number of people. It is particularly good where one's hives have only a small or shallow entrance, as it makes possible the prop-

er smoking of the colony. But the fasting which he recommends in addition is quite unnecessary.

The so-called smoke method of queen introduction has now had several seasons' trial, and, like every other method of practical bee culture, has given varying results in different hands.

Beekeeping is far from a fixed science. The bees are a living organism governed by certain laws, reacting to external conditions, always reacting the same to the same conditions; but if the conditions vary, the reactions vary also.

Two persons attempt a certain method; one succeeds, the other fails. They wonder at the results, but do not see the cause. They may be assured, however, that the conditions were different. And until all beekeepers become past masters in the art of reading bee actions and analyzing conditions, we may expect wide variations in the results of the same methods in different hands. The best that can be done will be to explain and emphasize the conditions essential to the successful carrying-out of a method, and then leave each individual to work out his own salvation.

It is somewhat unfortunate that the method of queen introduction so closely identified with my name should have been called the "smoke method," for there have been several methods called by that name, and not a few of the older beekeepers confuse the new with the old. The old was a system of smoking the colony more or less and letting the queen run in, generally at the top; but closing of the entrance was not a part of that old practice.

The new plan is more properly called the "distress method," for by confining the bees in a smoke-filled chamber, and preventing their obtaining any relief by ventilation, a condition of distress is created which enables us to do as we please with them.

Thru the courtesy of Mr. Morley Pettit I have been enabled to see the reports of the various Canadian experimenters with this method as well as the many letters sent to me, and also the published reports; also at every convention I am asked many questions concerning it. From all this evidence I have been able to get a pretty clear idea of the causes of failure by different persons, but the successes far outnumber the failures, tho we might not think so from published reports; for so long as matters go smoothly the operators do not hasten to inform the press. Every little while, by a letter or at a convention, I learn of some big operator who has adopted the plan and of many a lesser light who uses it. For the

new comers, and those who are not familiar with the "distress method," let me repeat the instructions and then speak of some of the causes for failure.

A queenless colony has the entrance to its hive nearly closed, say all but an inch. Into this space a cloud of smoke is blown until the bees roar; then this space is quickly closed. In about a quarter of a minute a queen is run in and the space reclosed. In ten minutes more the inch space is opened and the bees allowed to ventilate slowly. That is the sum and substance of the method.

Here are some of the qualifying conditions: First, the hive must be smoke-tight. Open corners, warped covers, cracked floors, etc., are conditions fatal to success with this method. All possible chance of ventilation must be prevented. Second, the smoke must be such as to create the greatest distress and the least danger, and that sort of smoke is the thick white choky kind. Third, enough smoke must be driven in to fill the chamber so completely that no bee will fail to feel it. Fourth, the smoke and bees should be confined for ten to fifteen minutes, and then relief given slowly as by opening only an inch of the entrance. If the whole of the entrance is opened at once the bees may pour out in a mass and sometimes the queen with them. They soon quiet down, even with only the inch outlet, and when quiet the entrance may be fully opened.

Failure has been reported where introduction was tried on a small nucleus—two or three frames—in a full-sized body. The cause is usually insufficient or thin hot smoke or both. Other failure reports have to do with attempts to introduce queens to big colonies occupying two stories or having supers on. It is very poor beekeeping that calls for changing queens under such conditions. It is much like swapping horses while crossing a stream. When colonies are as big as that, or are at work in supers, for gracious sake let them alone! They are doing well and working for you, so don't queer the job by butting in. Plan to do the requeening at such time as little or no honey is coming in, and when the stock is comparatively small. In the northern United States and Canada, August or September will be found to be the most advantageous plan.

If conditions compel the introduction to big colonies during the harvest it is only necessary to be sure the whole hive, supers and all, are filled with smoke, and that no cracks let it leak out; then the queen will be as safe as when put into a smaller colony.

But it is tough on the beekeeper and tougher on his bees.

Where a hive does not fit quite evenly to the floor, or a very *slight* crack is open between the cover and the hive, it is not always necessary to plug them up—just be sure the smoke is thick and white, and give a little more of it.

The best test is the tone of the bees' "roar." It is quickly learned, and the trained ear will instantly detect any undue subsidence, and more smoke will be given. I have several times noticed the sudden lowering of the "roar," and, on looking around, discovered smoke being blown from some unsuspected crack.

Create the distress; see that it is continued for about ten minutes, and you never need worry as to the safety of the queen.

As to the manner of running in the queen, use the handiest way—that which is easiest for you. If working with queens from one's own yard, taking them by the wings and tucking them in at the entrance, followed by a puff of smoke before closing the small space, is easy for all who are accustomed to handling queens. Sometimes it is easier to push the cover back at one corner, drive the bees back with more smoke, drop the queen in, followed by smoke, and close the cover. Putting the queen into a wire tube and holding the finger over the open end until the tube is pushed in at the entrance is another way. The escape-board on top as given by Mr. Fisbeck affords a very convenient place to drop in the queen or to put in an *opened* cage.

When running in a queen from a mailing-cage the end is opened and the cage is pushed in under the frames, and queen and attendants allowed to run in. My entrances are all an inch high so I can do that; and, by the way, if you see the attendants being

thrown out soon after you open the entrance you may be sure you did not give smoke enough, and that your queen is in danger. Pour in more smoke—thick and white, remember—and reclose the entrance for another ten minutes, at the same time making sure there is no leak by which the bees may drive out the smoke or obtain fresh air.

I find several advantages in the distress method over any other I know of. There is no long queenlessness of the colony, for the new queen may be run in at once on removing the old one, the only exception being where a colony has been badly overhauled in finding the old one. Under such circumstances, it is better to wait a few hours or over night.

Another advantage is the lack of any need of looking up queen-cells, as when a colony has been long queenless. If, however, it has been so long without a queen that a virgin may have hatched it will be necessary to find and remove her. And if a man must, he may safely introduce a queen by this method to a colony with laying workers, but it is a piece of poor beekeeping. Better add such a colony to one with a good queen, giving her the run of both chambers for a couple of weeks, then separate and give a queen to the queenless part.

Finally, the method yields the highest per cent of success. I lose less than one per cent of all queens introduced, and I can almost always trace such loss to insufficient smoke or some chance for ventilation.

In conclusion I would give one word of caution. Don't overdo the smoking, for it *is* possible to injure the bees and brood by an excess of smoke. However, there is more danger of too little than too much. Listen to the "roar" a few times and you will soon learn how much is needed.

Providence, R. I.

SOME OBSERVATIONS AND SUGGESTIONS ON THE SMOKE-IN METHOD

BY C. D. CHENEY

Upon the advent of any new method there are always some who try it with great success, and others who fail to make it work, with enough praise from the former and more than enough condemnation from the latter. The "smoke-in" method of queen introduction is a case in point.

Fortunately there are many open-minded and careful observers who, if given time, will ascertain possibilities and limitations so as to establish the conditions for successful general use, or determine the fallacy in the method.

While A. C. Miller, from his own intimate knowledge of conditions, can work the method with uniform success, others who undertake to use it can hardly be expected to meet with the same success, owing to their lack of that knowledge.

As time passes and experiences accumulate and are reported, some comprehensive instructions should be evolved on just how to manage the smoke-in operation to enable beekeepers at large to practice the method, even tho they do not know the "whyfore."

It is not necessary to repeat here any

thing in regard to why a queen is accepted in one case and not in another. It is generally agreed that when a new queen is once quietly among her new family there is little to fear for her safety. If the bees and the new queen can be brought to the same state of mind (sounds queer, but it is the best way we can express it), or distress, or what-not, there is no ground for a fight. When conditions return to normal, all thought of previous differences are forgotten and things are accepted as they then exist.

Every one knows that bees retreat before a puff of smoke; therefore when smoke is puffed into the hive entrance preparatory to running the queen in, the bees leave the bottom-board and the bottom-bars of the frames in a general route to get away from the smoke. The consequence is that, when the queen runs in, there is nobody at home, and she is alone to fight it out with the first guard she may meet. Such a condition is about as unfavorable to her acceptance as well could be, as all methods have for their prime purpose to get the queen into close relationship with a large part of the colony without causing suspicion or a quarrel.

It occurs to me that Mr. Miller's uniform



Bees working on prickly-ash, a scrub-like bush about 12 feet high. Photographed by D. M. Bryant, Ethelfelts, Va. [The original photograph showed upward of 20 bees working on this single branch.—Ed.]



Bees on milkweed. Photographed by D. M. Bryant, Ethelfelts, Virginia.

success is due, whether he knows it or not, almost wholly to using the right amount of smoke in the first place, and then awaiting the psychological moment to run the queen in when the bees have naturally surged back to the bottom-board in their desperate effort to make an escape. He is, no doubt, able to sense the moment when the queen will find everybody home and none looking for an intruder. May I suggest that the hive be lifted an inch or two, and then bumped down hard enough to bring a goodly bunch of bees down on the bottom-board a few seconds only before the queen is run in? The philosophy of this suggestion is that the queen becomes intimately mixed with the bees while *all* are in the *state of greatest demoralization*; and by the time things begin to be natural again she has reached the combs (still among her new family), and is at home. By bumping the hive, and so bringing a mass of demoralized bees down to the bottom-board, that "psychological moment" can be made to order, and utilized, as it would seem, without fail.

If this should prove to be the deciding factor between success and failure it will

thus be possible to eliminate much of the present uncertainty in the general use of the "smoke-in," and so make it available for everybody.

So many reports of failure with the "smoke-in" queen-introducing method contain, in substance, the statement, "I removed the old queen in the morning, and waited until evening to give the colony a chance to quiet down, and then smoked-in the new queen." One may feel justified if some importance be attached to those particular times of removal and introduction as affecting the result.

The morning removal and the evening introduction appear to be favorite practice, and during the past season I proceeded that way with three queens and lost the three. This set me thinking.

It seems perfectly logical to "give the colony time to quiet down;" but from observation and experience I conclude that in such circumstances the colony doesn't quiet down, and the result seems to bear out this conclusion. I desire to call attention to

these observations, and to suggest for study and experiment that bees really "quiet down" only at night (taking no account at this time of cold and wet days), which should suggest that the logical time for removing the old queen would be toward evening. Some time toward noon the next day, when the old bees are away on business, would be the best time for introducing the new queen. This plan would probably not influence results with any cage methods, but it "looks good" in relation to any run-in method.

The "smoke-in" appears to me as the simplest introduction method yet proposed; but it needs to be better understood, so that it will be practicable in the hands of any one, whether he knows or does not know why he is to do this or that. I have been giving considerable thought to this matter, and I am giving my observations and conclusions to set others to thinking, and in the coming season to experimenting, I hope, in order that some helpful knowledge may be developed.

Hoboken, N. J.

HANDY DEVICE FOR MELTING BEESWAX

BY J. H. TODD

I have just finished fixing sheets of foundation with melted wax, using a little device I have made for this purpose, and it works perfectly. I never could get on at all with the Vandeusen tube fixer; but my device is a pleasure to work with, and can be made by any one who can use a soldering-iron.

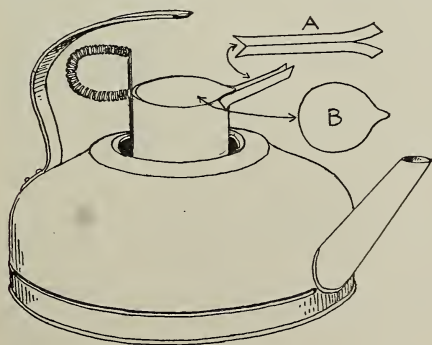
The first thing required is a wide shallow tea-kettle. Mine is $2\frac{1}{2}$ inches deep and 8 inches in diameter. With a file, cut the han-

dle off so that it projects only a little way over the lid of the kettle. This is done because the steam condenses on the under side of the handle and drips into the wax.

It also gives more room for putting the wax-container in and out of the kettle. Now for a description of the wax-container. Get a small round cocoa or similar tin, about 4 inches deep and $2\frac{1}{2}$ inches in diameter, or slightly smaller than the lid-hole of the kettle. Now there are two things to solder on—a spout and a handle. In the spout cut a piece of tin $1\frac{1}{2}$ inches long and $\frac{3}{8}$ inch wide. Now in a vise or with a pair of pliers bend this lengthwise to a V shape or angle of 60° ; then at one end cut up the bottom of the V for a distance of $\frac{1}{4}$ inch and bend the cut ends as in A.

Now take the tin and bend the top like the spout of a cream-jug, as in B, and here solder on the spout, pointing slightly up so that its delivery end is $\frac{1}{2}$ inch above the level of the top of the tin.

Now for the handle. Get a piece of galvanized spring steel wire and a piece of $\frac{1}{4}$ -inch round iron (a bolt or something of that kind); put the round iron in a vise, and neatly and tightly coil the wire around it till the length of the coil is about 2 inches. Leave $1\frac{1}{2}$ inches of straight wire at both the ends of the coil, and slip the coil from the bolt or round iron. Stretch it out a little so that light will show between the coils of wire. With a hammer flatten out



dle off so that it projects only a little way over the lid of the kettle. This is done because the steam condenses on the under side of the handle and drips into the wax.

the ends of the wire. Now get the tin; and, opposite to the spout, solder on to it one of the flattened ends so that the spiral spring will stick out at right angles to the side of the tin, and so that the under side of the spring is level with the top of the tin. Take the other flattened end, bend the spring upward, and solder this other flat end on to the tin close to the first one; but fix it with its end only $\frac{1}{2}$ inch down the side of the tin. This makes a good handle which will not get hot.

The working is, of course, plain. Keep the kettle boiling slowly on an oil-stove, with the tin standing in it. The tin, of

course, contains the wax, and also a piece of flat lead to weight it down. The little spout enables one to pour the wax just where it is wanted; and if the kettle keeps boiling, it is just the right heat, and with a little practice you can run the wax exactly right. After a time the spout fills up with cooling wax. It is then time to put it back into the kettle for a moment or two. A touch of the wax at the end of the spout sends it back into the tin. By the way, don't have too large a tin or it will prevent the steam that rises from the kettle from keeping the spout hot.

Renwick, New Zealand.

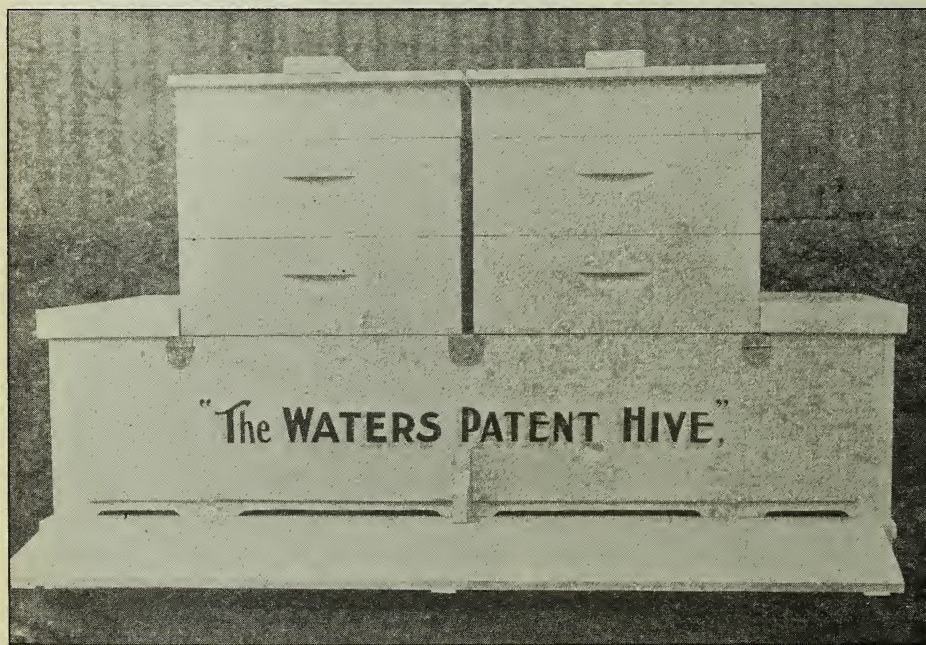
THE WATERS PATENT HIVE

BY W. WATERS

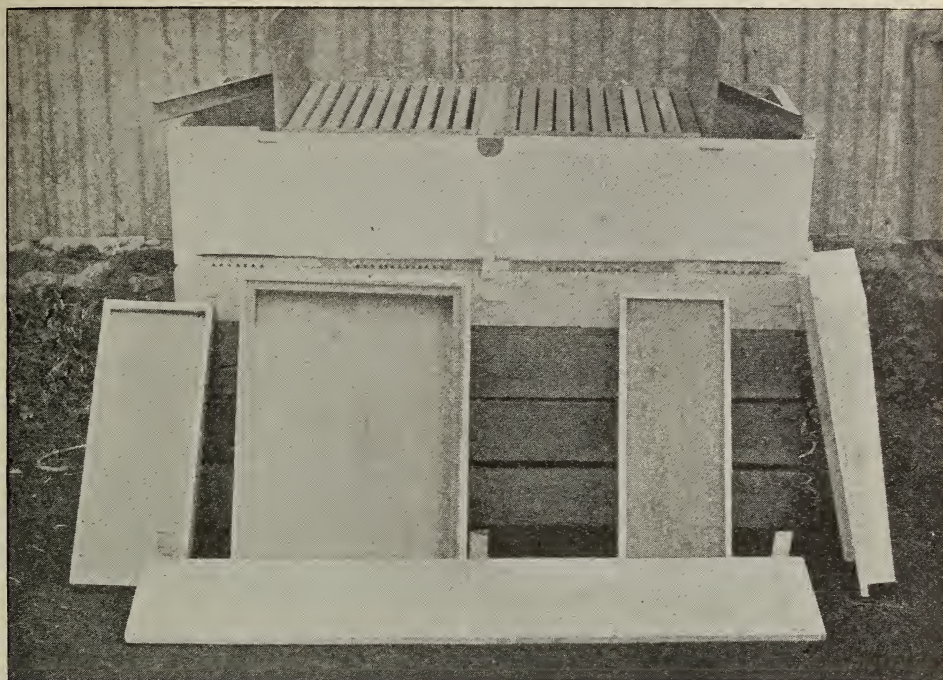
The season of 1914, 1915, in New Zealand was the worst we had had for many years, not only in point of honey production but on account of the large number of queens which failed to return after mating. In the ordinary hive, where the old queen was destroyed and the young queens failed to return, the work of these hives was practically lost for the season. A new hive which I have invented makes possible the presence of two queens in the same hive for a time, so that if a queen fails to return a new one

can be reared and no time of production lost in requeening.

The reader will notice from the illustrations that the hive is a double one, altho it may be made as a single hive. By inside measurements it is 46 inches long by $10\frac{1}{2}$ inches deep, and is divided by a single central division-board, surrounded by galvanized gutters two inches wide by $\frac{5}{16}$ inch deep. The sides of the gutter are turned over and made double, and rest on the central division. The hive on each side



Double hive, permitting two queens, if desired, as used by W. Waters, Papatitoti, Auckland, N. Z.



The interior of the double hive.

holds 11 frames up to the center of the side gutter. The side gutters are $1\frac{1}{2}$ inches wide by $\frac{5}{16}$ inch deep, and fit into keepers. They can be lifted out at will.

There are two movable division-boards of $\frac{3}{8}$ -inch stuff, one on each side. This makes it possible to increase or decrease the number of frames to the colony. There is room for 15 frames on each side.

Those guards at the entrances are of galvanized-iron, and ant-proof. They fit in behind a galvanized fencing wire turned in at the end, driven into the front board, and stapled at intervals. They are intended only for winter use.

The bottom-board consists of two railings, 3 feet by 2, each 4 feet long, which carry the flooring nailed flush with the rails back and front.

One great advantage of this hive is that it requires no lifting or shifting about the apiary, for all the work can be done without other appliances. I can say, after working the hive for two seasons, it makes beekeeping an actual pleasure. There is no necessity for extra bodies, covers, and bottom-boards. Where the hive is placed, there it remains.

We will suppose that a beekeeper has 50 of these hives holding 100 colonies, and he wants to requeen them all in the spring and

at the same time prevent swarming. He is sure to have ten colonies in his apiary with queens good enough to breed from. Go to these ten colonies, and in each case lift out the side gutter and pull out the movable division. Now take five frames with the queen and place them at the outer end, and back them up with a division-board and replace the gutter. As this hive takes eleven frames to the colony you will now have six frames with no queen left in the main compartment. Back them up with a rough division-board, and they will at once build queen-cells anywhere from ten to twenty in each colony. When those cells are from eight to ten or twelve days old, go to all your other colonies and do the same as with the ten, and at the same time give a cell to each queenless six frames. The queen will hatch out, mate, and be laying in due time. In the mean time the old queen has been laying uninterruptedly. When the young queen is laying, remove the old one and pull out the division. Slide the old queen's frames back to the others and replace the gutter and division-board.

This is a simple method of requeening an apiary, preventing swarming, as the young queen will not swarm the same season, and you can allow her another frame, making twelve if she wants them.

The hive is provided with two exits at the back, which enables you to hatch and mate two queens on those six frames if you wish to have spare queens. In that case you would separate three frames from the other three by a division of perforated zinc, giving the center comb of each three a cell.

This hive may be made at very little more expense than that of the ordinary hive. It is, moreover, far and away cheaper than the

ordinary hive in this respect. It requires no nucleus for queen-rearing and mating, and you are saved all the work therein. There is no handling and introducing of queens. You require no double plant of bottom-boards, bodies, and covers for shook swarming. All the work of the apiary can be done with this hive without any other plant whatever, and very much better, and at half the cost of labor.

Papatvitoi, Auckland, New Zealand.

STORES NECESSARY TO WINTER BEES OUTDOORS

Bees in Pound Packages from the South vs. Wintering in the North

BY J. L. BYER

On page 969 the editor, replying to a question of Grace Allen, stated that they figured on 20 lbs. of sealed stores, including combs, as sufficient for northern wintering, and that 25 or 30 would be better for the North. In my department for Jan. 1 I say that for here in Ontario the most of us would want double that amount, and that we would not have any trouble in getting it used by the time our main flow started in June. I further stated that Mr. Sibbald makes his ten-frame L. hives weigh 70 lbs. without the cover, and that many others insist on nearly as much.

Now turn to page 2, Jan. 1, and see what the editor claims I say: "Mr. Byer says he himself would require from 40 to 50 pounds of stores, and Mr. Sibbald uses 70 pounds." I have just been to one of the extracting-houses and weighed up some empty combs and hives, and the results are interesting to me, especially when compared with the "20 pounds, combs and all," proposition for outdoor wintering. Ten L. combs were selected from a pile of extracting-comb, these combs having some pollen in, but no more than would be in the average combs going into winter quarters with bees on them. I was rather surprised to see that the ten combs weighed 12 lbs. If old brood-combs weigh like that in Ohio, then 8 lbs. of actual stores, either honey or sealed-over syrup, I presume, will carry the bees thru the winter. My statement was that I would want double the amount specified, so that would make 40 minus 12 pounds for combs, pollen, etc., leaving a balance of 28 lbs. actual stores. How many outdoor winterers in the north will say that is too much? Please hold up your hands. Mr. Sibbald makes his hives to weigh 70 lbs. How does that work out in actual amount of stores? I weighed a ten-frame hive this morning, and found that it tipped the scales at 16

lbs. This hive has cleats all around top so it may be a bit heavier than the ordinary run. Sixteen plus 12 lbs. for combs, etc., makes a total of 28 lbs. Seventy pounds, hive and all, minus 28 lbs., means 42 pounds of stores—pretty generous allowance, I will admit, but still quite a long way from 70 lbs. As a matter of fact, I want more than 28 lbs. of stores in my hives; and at a rough guess I would say that all our colonies this fall would run, on an average, 35 lbs. No, this is not all used in *wintering*—indeed, not half of it is consumed during the cold winter months; but after brood-rearing starts nicely during the months of March and April the stores are rapidly turned into bees. Then, again, we often get a lot of bad weather during first two weeks in May, and, needless to say, a large amount of stores is needed then.

As to cost of wintering our bees, the estimate of the editor is high enough, to say the least. Let us figure that item a bit. He estimates a cost of from five to eight dollars per hive, figuring on that fictitious amount of stores, and reckoning said stores at 10 cts. a pound. In the first place, our bees do not winter on stores worth 10 cts. a pound—not by any means. Running for extracted honey, at the close of the white-honey flow we have little honey in a L. brood-nest. Any honey put in the brood-nest goes there during the latter part of the buckwheat flow; but more particularly if we happen to have a flow in September from asters or goldenrod, which does not often occur. This honey is not worth more than 6 cts. in the brood-nests, and would bring little more than that if extracted. The bulk of stores is sugar syrup, and that will stand us just about that figure too by the time it is fed. On my estimate of 35 pounds to that of Mr. Sibbald with 42 lbs., the result would be that it costs us for wintering between \$2.00

and \$2.50 per colony—quite a difference again, between those figures and the starters given in this editorial.

As to brimstoning bees in the fall, surely an unheard-of proposition here in the North, and the only mention I have ever seen in this line was on the part of a good friend in the South, who sells bees by the pound. The shipping of bees in combless packages has a future, but no pound package can ever compete in the matter of producing surplus, with well-wintered full colonies. No, sir, "it can't be did." Whether bees will consume more or less stores here in Ontario than they will in Ohio—frankly, I don't know. As pointed out, what Dr. Phillips says proves conclusively, *theoretically*, that our bees should consume more; but as a matter of fact I am not convinced that all his claims in that line work out in practice. I know that during winter we have some thaws, causing the bees to get stirred up more or less, and yet not warm enough for them to fly; that if these thaws are at all frequent, our bees consume more stores than they do during seasons of steady cold weather.

The question of insulation is a difficult problem to settle satisfactorily; and while I believe in lots of it for our climate, I was somewhat jarred in this line when visiting friend House to see that while his bees were well protected on sides, rear, and tops, yet he had absolutely no packing in the fronts. Dr. Phillips says that the insulation of a hive is just as complete as its weakest place, so on that basis of reckoning the bees in House's apiary have no insulation except the inch board that comprises the front of the hive. It is not necessary to say as to how House's bees winter, and I do not attempt to make any explanation, but will leave that for Dr. Phillips to do.

As to the matter of snow over hives, I should think that in localities where they have many thaws snow would never be all over hives very long at a time. When snow is over hives very long we find that there will be large spaces melted around entrances, and there is no danger of water congealing there. Just at present I only wish we had snow over our hives here in York Co., as we have none at this date, Jan. 12, and we are apt to have severe weather during the next four weeks. However, I would not advise any one to take any chance on my advice not to worry over the snow problem, as we have had but three winters when our bees have been covered over so long at a time. Altho they have wintered so well so far, another season might tell a different tale. I expect and

hope that the north bees are covered over at present, and we are doing no worrying. Another thing, do not forget that I emphasized the matter of having a quilt over frames instead of a board, and that we want lots of absorbents over the quilts and an air-space between packing and tops of winter cases.

In conclusion, while there is a chance that my advice might not be the best for some localities regarding the matter of allowing snow to drift over the hives, if there is anything I am sure of it is this: that 20 pounds of sealed stores, combs and all, are entirely inadequate for wintering bees outdoors in our locality; and I again say, without any hesitation, that we want double that allowance to carry on beekeeping successfully here in Ontario.

Markham, Ont.

[The whole discussion hinges on a careless reading and an unfortunate misprint. On page 969 the little word "not" was omitted in the sentence replying to Mrs. Grace Allen. It should, therefore, have read as follows: "We should figure on 20 lbs. of sealed stores, not including combs." On the face of it, it might look as if it were an ingenious way to crawl out of a hole. Be that as it may, that this must have been the meaning is clearly shown by repeated statements to the same effect in these columns, and particularly in the A B C and X Y Z of Bee Culture, late editions. On this question we state that "the opinion of the beekeeping world is somewhat divided;" but we recommend "from 20 to 25 lbs. per colony of sealed stores." This statement has stood unchallenged in our A B C and X Y Z for the last three or four editions. In earlier editions we find the following: "See that every colony has from 20 to 25 lbs. of sealed stores." In the light of Dr. Phillips' experiments and the practice of beekeepers in the North where it is much colder than here, perhaps we should make the figures in the next edition read "from 20 to 30 lbs. according to locality."

The same lack of time, or carelessness, that permitted the little word "not" to be left out of the quotation above mentioned also caused the misreading of the statement as to the amount of stores that Mr. Sibbald found necessary for good wintering outdoors. We have no excuse to offer, except that at the time we had "too many irons in the fire."

But when the corrections are all made, we still consider that 42 lbs. is a large allowance, and 28 lbs. ample. Some of the time the beekeepers of Ontario will be compelled to use ten-cent honey. On that basis

it costs anywhere from \$2.80 to \$4.20 to winter a colony of bees. If they use a six-cent honey the figures will stand respectively \$1.68 and \$2.52. On the ten-cent basis the question may still be asked by some whether or not, if we take into consideration winter losses and the present price of sugar syrup, and the price of honey, some beekeepers could not afford to import bees in three-pound lots from the South. Understand, we do not argue this.

According to one Southern advertiser 3 lbs. of bees in 50-lb. lots would cost \$3.50. The express would add from 75 cts. to \$1.00 more.

On the 28-lb. basis per colony the wintering on a basis of 6 cts. would beat the pound shipments. On the 42-lb. estimate the difference with a ten-cent would not be great.

While buckwheat honey may not be worth more than 6 cts. per lb., a great majority of the beekeepers of Canada are not where they can get buckwheat. An aster honey is often dear at any price. Is it not true that most beekeepers use a good table honey? Sugar syrup is cheaper, but you argue that it does not go as far, pound for pound.

Wintered-over bees, you must admit, pound for pound, are not as fresh, vigorous, and strong, as young bees direct from the South. If you can shake more than three pounds on the average from your colonies in early spring, you are going some.

While you admit that Dr. Phillips' observations go to prove that bees in a cold below 57 would consume more stores, you are "not convinced that all his claims in that line work out in practice." Why not? Have you not observed that, the colder the winter or the colder the surrounding atmosphere, the more stores the bees will consume? Time and time again we have noticed in our own locality during a prolonged severe cold spell that our bees consume at least 50 per cent more stores than they do during a milder winter. It is the prolonged severely cold winter that causes dysentery, as a result of overeating to keep warm. Of course, if the winter is *too* mild the bees will use more stores because of brood-rearing. Hence it does not follow that you "should require even less stores than in Ohio."

With regard to Mr. House's practice, you failed to state that his yard is located in a deep gully, and protected by a high bluff. One would almost raise the question whether his bees needed any packing at all. Mr. House's practice hardly proves that plenty of packing is not needed.

We are glad to see that you admit, on the matter of hives buried in snow, that "there is a chance that my advice might not be best for some localities." There is, indeed, a big chance if reports mean anything. Some beekeepers, unless the statement were challenged, would get into trouble, we fear.—Ed.]

EUROPEAN FOUL BROOD AND MY KIND FRIENDS

BY R. F. HOLTERMANN

Job had friends who sought to advise him in his distress; but we know that they only added to his discomfort. So it appears to me to be with those doctors who so kindly volunteer information for my consolation. There is "Doctor" H. Harley Selwyn, who, on page 930, Nov. 15, states, "It does sound odd to me to hear of one who has been so long in the business meeting only now with this disease."

When I was a boy, and also since that time, I have been a good deal between country and city; and therefore, with divided experiences, I probably never knew very much of either. One thing, however, afforded me great amusement. When the city boy came to the country the country youth considered him as green as grass. When the country youth came to town he was, in the estimation of the town youth, a "hayseed." Each thought his experience was the

hallmark of wisdom. There are many beekeepers who have not had European foul brood among their bees; and I do not feel the richer for having had such experience.

Then comes Dr. J. E. Crane, on page 985, Dec. 1. He is a veteran. He attempts to encourage by stating "The shiftless beekeeper may well regard this disease as a serious matter if not an actual calamity."

There is nothing in Mr. Selwyn's article that affords me the slightest consolation. On page 413 J. L. Byer states, "We dread European foul brood more than ever, and, contrary to what Dr. Miller's sentiments seem to be, we have more or less contempt for American foul brood." I may flatter myself when I say that I think I am as well posted on the nature of the disease as is Mr. Selwyn. Some of the largest New York State conventions for several years have been attended by me to get the experience

first hand from beekeepers there, and I have again and again heard in public and in private the information the four New York State bee-inspectors had upon this disease, and this information still makes me dread the disease among our bees.

Mr. Selwyn's own article condemns his argument. He says, "Notwithstanding the fact that Italians can rise up in the midst of European foul brood and overcome it, I believe that they must suffer first (some worse than others) before becoming immune to other ravages." Taking this to be a correct statement, should it be no cause for anxiety? Is this period of suffering of no practical interest? As I said once before, I doubt if a strain of bees is immune in one locality and not in another. I doubt if there are any scientific data for such a claim.

Now as to Mr. Crane: I have put into winter quarters 748 colonies of bees. There has been plenty of work each season without looking after European foul brood; in fact, it has practically always been a case of doing what has been considered the most

important, and leaving that which was the least important undone. With what I would consider a pretty extensive business, the addition of this disease to look for and stamp out will add very much to my care, to say nothing of the loss thru dead larvæ which would otherwise develop into a working force. We have not only to get rid of the disease, but we have to look for it in every colony. I shall consider that, for the safety of our own bees, as well as a duty to other beekeepers in the vicinity. The bees, as far as possible, should be prevented from coming in contact with diseased larvæ.

To save any one from further trouble, let me say that, after closely questioning quite a number who have had the disease (European foul brood) among their bees, after reading pretty well all that has been written about the disease in American bee literature, and after a season's experience with the disease, the kind of man whom I wish to advise me is the one who has stamped out the disease after it has spread among his bees, not one who admits he has never got rid of it.

Brantford, Canada.

IS THE BLACK BEE THE STRONGER?

BY WILLIAM BEUCUS

If we introduce a few Italian queens in an apiary and secure a general sprinkling of yellow thruout the yard, and if, then, we leave the queens and drones to cross as they please, we shall find that the yellow color of the workers gradually disappears. Observation of this phenomenon has caused many beekeepers to assert that the black bee is stronger, more predominant, and, therefore, the better bee. Now, it appears to me that this is not necessarily so, and that a satisfactory explanation of the reversion from yellow to black can be given.

If I remember rightly, it was Darwin who called attention to the fact that, if a number of varieties of fancy pigeons, such as fantail, pouter, etc., of various shapes and colors, be crossed, and the process then continued with the offspring, the shapes and colors will become less extreme, and in time the contrasts will disappear, leaving as a product of this crossing of breeds the original wild rock pigeon with its distinctive shape and markings from which, by a gradual process of selection, all varieties have been bred.

Now the explanation is as follows: In every species there is a constant tendency to variation—that is, there are small indi-

vidual differences. But these small variations are not all in one direction. They are in numerous directions; hence, in crossing, the individual peculiarities cancel each other and leave in the offspring the size, color, markings, etc., common to the species as a whole. Thus the species remains a constant. But man watches for variations in one direction, and by crossing with each other individuals showing the same divergence he intensifies, strengthens, and makes permanent that divergence. Now, if two or more divergences are made from the same original stock, as in the case of the pigeon, there still remains in the several varieties an obscured tendency to assume the characteristics of the original stock. The crossing of the varieties with each other thus mutually cancels the tendencies to assume their various forms, colors, etc., and strengthens the tendency to assume the form, color, etc., of the stock from which they originated because this tendency is common to all variations.

It seems to me this explains the tendency of the Italian bee to lose its distinctive color and revert to the black. The black is the older race from which the yellow has varied. The fact that Italian queens and drones are

by no means all tinged with yellow is pretty strong evidence that the black is the original stock and the yellow a derivative. But if the individual differences in the members of a species cancel each other, how could the distinctive yellow color have become so pronounced? It is impossible to give a positive answer to this question.

It is possible and probable that yellow was intensified in some locality thru a process of natural selection, the bees showing this characteristic having a better chance under changed conditions to survive. In our northern country the black bee would have the better chance because of the rapid absorption of heat during exposure to the sun. If you will watch carefully on a cool day, when there are clouds, you will find that whenever the sun is obscured the flight of bees from the fields to the hives decreases; but with the reappearance of the sun the flight at once increases. Throw a handful of dead bees on the snow in March, and you will see that they sink an inch or more below the surface. It is because heat is absorbed which melts the snow in contact with the bee. The lighter the color the less the heat absorbed. If these bees flew from the hive the darker ones would be warmed up quicker and have a better chance to return. In a warm country such as Italy, possibly the absorption of heat is not beneficial but injurious, or perhaps yellow made

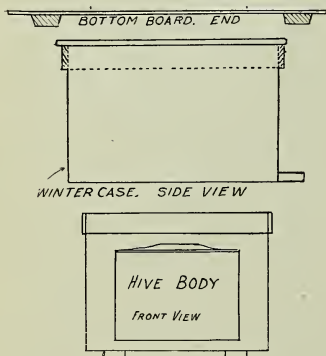
possible the more easy escape from enemies. That the yellow bee reverts to the black is a common belief, and is indeed true; but this does not prove that the black is the stronger. It would be possible to breed yellow bees for extreme strength, hardihood, and yet these same bees with unusual strength in crossing would revert to the black. Yellow color in Italian bees is the conspicuous mark by which they are distinguished from the German bee. Beekeepers have associated this color with certain desirable qualities such as quietness on combs, resistance to moths, and energy in cleaning the hive and keeping it clean. Naturally they have assumed that an intensification of color was necessarily paralleled by an intensification of various desirable qualities. Hence the breeding for color which may or may not accompany hardihood, energy, excellence in honey-gathering, longevity, etc. This explains the disappointment of those who find that the extremely yellow bees show no better results in honey crops than the blacks. And when, at last, it is undeniable that some of these fancy yellow bees are not keeping pace with the blacks to which they are reverting it is assumed that the black is the stronger. The real truth is that the black is the original stock and the yellow the derivative, and that, as far as strength is concerned, either may be stronger than the other.

Cadott, Wis.

A SINGLE-COLONY WINTER CASE

BY WILLIAM G. RUSTGEN

Here is a sketch of a single-colony winter case. The bottom-board has two inch-strips (not shown in the diagram) for the hive



to rest on. The case is 25 x 30 x 14, and rests on the edge of the bottom-board,

which is made of $\frac{7}{8}$ -inch boards cleated together.

In the fall, when the bees are to be packed, each colony is lifted off its bottom-board and placed on the bottom-board of the case. Then the case is set over the hive, and the space between is filled with packing material, and the telescope cover is put on top of all.

The bottom-board cleats on which the hive rests are 26 inches long. The hive covers 26 inches, and a four-inch board covers part of the rest, and the other two inches project beyond the end of the case. This has a piece $16\frac{1}{4} \times 2$ cut out for the end of the bottom-board to go thru.

A two-story hive can be accommodated by putting on another-story winter case. By this method a two-inch space is left under the frames, and the entrance, of course, must be contracted.

Dyer, Ind.

QUEEN - EXCLUDERS

BY W. C. MOLLETT

I have noticed several comments on the use of queen-excluders by different contributors as to whether they prevent the bees from storing as much honey in the supers as they otherwise would. As to this, I think it may depend upon the kind of honey produced, whether comb or extracted. In producing comb honey in bulk or in extracting-frames I think their use is absolutely necessary if the combs are expected to be kept free from young bees—at least that is the case here. I produce only bulk comb honey, as it brings just as good a price as any, and, of course, the bees will store more honey in the shallow frames than they will in sections.

It took only a short time for me to find out that the use of excluders produces very much better results than depending upon the chance that the queen would not go up into the supers to deposit eggs. One spring I had put in full sheets of surplus foundation, and was expecting a fine lot of basswood honey, when, on examining them just before the flow of honey from basswood was due, I found that nearly all the frames contained eggs and larvæ in all stages of development. Of course this spoiled my chances for that season, and also showed that it was unwise to depend upon the caprices of the queens as to where they might deposit their eggs. In some seasons queens do not go up into the supers, but this is only the exception, not the rule. In producing section honey I do not think there would be very much danger of the queen going above to lay, as the supers are divid-

ed into so many different parts by the sections, separators, etc.

As to whether bees will store as much above an excluder as they would without it, I have never been able to see any difference during the main honey-flow; but I rather think that they will store more in the supers during the fall flow. However, as in most localities they do not secure much more than enough to carry them thru the winter from the late flow, this is not very important. I never have any trouble in getting bees to work in the supers during the main honey-flow, when I give them sheets of foundation, which I always expect to do, as I am convinced that the use of full sheets of foundation is a good proposition.

I notice that the price of zinc has been raised on account of the war. As the new wood and wire honey-boards are so much superior to perforated zinc I am not worrying very much. In my opinion the zinc excluder, entrance-guards, etc., are so much outclassed by the wood-and-wire ones that they will soon go out of use anyway. I have used the wood-and-wire excluders ever since they have been on the market, and am so much pleased with them that I would not use perforated zinc if I could get it free of charge.

The latest improvement in excluders, the ones with seven wires to each space, are still better than the ones that had only three wires to the space. I think that the new ones will, without any doubt, replace the zinc ones almost entirely in a few years.

Stonecoal, Va.

CORRUGATED-IRON BEE-SHEDS IN ARIZONA

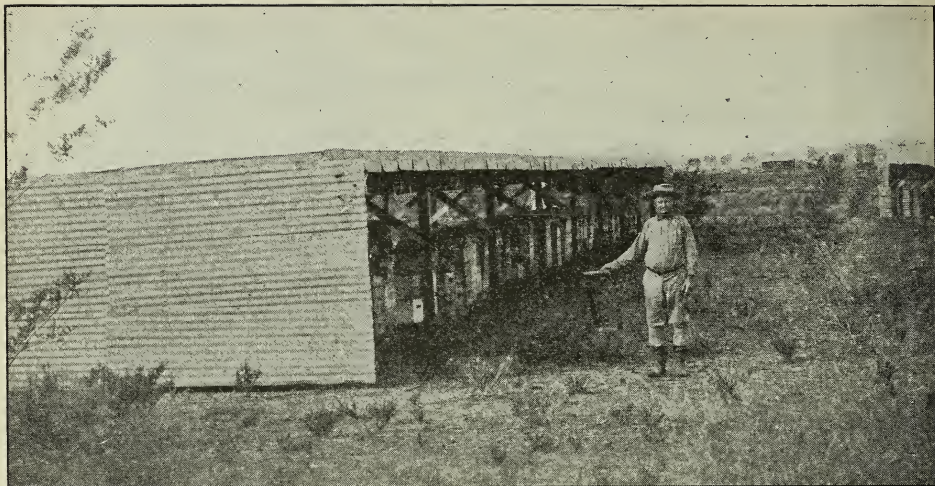
BY J. M. HERMAN

To show that all sheds in Arizona are not built of brush and barbed wire, I am sending a picture of my sheds which are built of corrugated iron. The posts are 4x4x9 ft., made of redwood timber. These are set in the ground so that they are 7 feet high on the north side and 6 ft. 8 inches on the south side. They are located 12 feet apart each way. The stringers are of 2 x 4 pine lumber, enough to make the combined length of the shed 108 feet. The cross-rests for the stringers are 2 x 4 x 12 feet; and the braces, 1 x 4 x 6 ft., are nailed to the posts and these cross-supports.

The corrugated iron is bent down over the stringers 16 inches on the south or

lower side, and 9 inches on the north or upper side. The pieces are nailed to the sides of the stringers as well as to the top, so that they are not likely to be blown off. The ends of the shed as shown in the picture are made of the same material. There is an aisle for a wheelbarrow between the rows of hives in the middle of the shed.

I have seven of these sheds in all, holding 800 colonies, two at the home apiary, two at the south apiary three miles south of Chandler, and three at the west apiary a mile west of Chandler. These latter are 132 feet long. The whole expense was about \$700, but I know that my bees are much safer from loss by fire.



One of J. M. Hermann's corrugated-iron bee-sheds at Arizona. Mr. Herman has seven of these in all, which hold 800 colonies.

I once had almost a thousand colonies in one apiary in a mesquite location for sixteen months, and they did well, but 300 colonies is enough in an alfalfa location.

A MOVING SCREEN.

The screen that I hold in my hand in the picture is for moving bees. The frame is made of eight pieces of wood, covered with screen, the dimensions being such that there is about 1/16 of an inch play when slipped down over the top of a hive. I drive finishing-nails thru the front and back of the frame into the hive, allowing the nailheads

to stick out about $\frac{1}{4}$ inch so that they can be pulled easily when I wish to remove the screen after moving.

I close the entrance with two strips of wood. The lower piece is two inches wide, and as long as the entrance, so that it will just slide into it. To the upper side of this a piece one inch square is nailed firmly. One nail thru this into the front of the hive keeps the entrance closed most securely, and yet the whole thing can be quickly removed.

Chandler, Ariz.

A "NEW" STARVATION METHOD OF QUEEN INTRODUCTION

BY J. ANDERSON

In GLEANINGS for Nov. 1, page 896, Mr. A. T. Rodman gives under the above heading a description of his method of introducing queens. This plan, however, is not new on this side of the Atlantic. It is thus described in the 1904 edition of "Simmins' Modern Bee Farm:" "The three things of importance to be observed are as follows: (1) Keep the queen quite alone for not less than thirty minutes; (2) she is to be without food meanwhile; (3) and to be allowed to run down from the top of the frames after darkness has set in, by lamplight." Simmins proceeds to suggest a match-box as a suitable temporary receptacle for the queen, but continues: "My own practice is to carry the queens in the vest pockets, in small tubular cages made of fine perforated zinc or tin, one end permanently closed, while the other is pressed into a piece of

foundation after the queen is in. When ready remove the foundation and let her run into the hive."

Cheshire made exhaustive tests of the Simmins method, and gives his testimony in Vol. II.—Practical (published in 1887): "I tried many dozens of experiments, and found that by Mr. Simmins' method it was quite easy, not only to introduce but to get one queen to lay in half a dozen distinct hives in a single week."

There are very many beekeepers "in this locality" who use the Simmins fasting method with uniform success. It is not new, but it is, nevertheless, very interesting to find that there has been rediscovered in all its details a method described by Simmins more than thirty years ago.

Aberdeen, Scotland.

THE WINTER CASE ADAPTED TO SOUTHERN UTAH

BY M. L. SKOUGARD

Our bees went into winter quarters in fine shape. I never saw as fine a fall as we are having this year. My bees flew until Dec. 10, with the exception of a few days. I found them gathering pollen as late as Dec. 8. I pack my bees for winter. I use a winter case with four inches of wheat chaff between two inches on the bottom and a six-inch super on top, full of chaff, with a cloth over the chaff, the super lid, then the cover. I tack burlap on the bottom of the super to keep the chaff off the frames; then I put a piece of narrow blanket between the hive and super to keep out air.

As nearly as I can learn, I am the only beekeeper in southern Utah that packs bees

for winter. Beekeepers here say they do not need any protection. But in the spring is the time to tell. Last spring I gathered a nice surplus of dandelion honey. It is as pretty and yellow today as the flower itself. Mine were thru with swarming, and my bees were on the job when the other bees were just building up nicely. When some of the beekeepers learned that I was extracting so early in the season they said it was because I kept Italians, and had queens that I gave three dollars apiece for. I know that my queens have a great deal to do with it, and I know that the packing helps wonderfully.

Parowan, Utah.

THE MISSOURI APICULTURAL SOCIETY

BY AUSTIN D. WOLFE

For twelve years those in Missouri interested in the promotion of beekeeping met under the name of the Missouri Beekeepers' Association. At the twelfth annual meeting, held at St. Joseph, Dec. 7, 8, 1914, it was decided to incorporate and to attempt something of larger significance.

Having incorporated with Columbia, the seat of Missouri University, as the principal place of business, it became necessary to consider the ways and means of building up a constituency and of enlisting popular interest. In spite of considerations looking toward a meeting in December (notably the invitation to take position in the "circuit" formed by Mr. Pellett and Dr. Phillips) it appeared necessary to hold the first meeting of the incorporated organization during Farmers' Week at Columbia, January 4-6, 1916.

The result justified the decision of the executive committee. Two large rooms in the Horticultural Building were allotted to the society. One of these was used as an assembly room, with display of literature and honey. The other was a general laboratory, with no less than six different models of hives and an almost equal number of supers, all occupying one long table. On another table were the implements of the craft, many if not most of them being home-made and of practical value, which casts no discredit on a manufactured article, but merely says that the former variety will answer just as well. Then there was an extractor, a home-made uncapping-can, knives, hive-tools, nailing-frame, wire-imbedder, etc.

This being the first meeting since the granting of a charter, a constitution and bylaws were adopted. Then the program contemplated a discussion of beekeeping from the start for the benefit of the novices. Treasurer J. F. Diemer, of Liberty, unable to be present, sent a short spicy paper on "How I Began." E. B. Gladish, of Higginsville, also unable to appear, sent his brother, Mr. Charles Gladish; and the presentation of Mr. Gladish's subject, "What Hive shall I Use?" led to a discussion which soon brought out the fact that bee-men generally are discarding the eight-frame for the ten-frame hive, with the Hoffman-Langstroth frame.

The society is most fortunate in coming at once into close relations with the Department of Horticulture of the State University. Dr. Leonard Haseman, associate professor of entomology, aided by an admirable working model of a bee, delivered a plain and very interesting lecture on the anatomy of the bee. It was the kind of lecture that would entertain and instruct a gathering of farmers or of scientists—just the thing for a rural school.

But all the time there was a stream of visitors who asked to be "shown." On the last day the program was entirely abandoned, and Mr. Tyler, Professor Haseman, and Mr. Darby had their hands full as they took class after class—a few individuals in each group—past the tables, explaining the nature and purpose of the hive, how and why it is constructed, answering questions on the manipulation and care of bees, elucidating the uses of the extractor and of the

different implements to be seen on the tables, and doing a general promotion work. Young men were there who wished to make their farm incomes greater. Students from the university were there, attracted by what they had learned in their courses in entomology; women and girls were there who liked honey and were willing to help produce it. Some teachers and county superintendents were there, who manifested a ready sympathy in the thought that boys and girls might take blue ribbons at school fairs for honey just as well as for corn, poultry, or puddings. The society gained a new outlook upon its opportunities, and the prospect is highly encouraging.

Officers were elected as follows:

President, E. E. Tyler, Columbia, Mo.; vice-president, Emil F. Nebel, High Hill,

Mo.; secretary, Austin D. Wolfe, Parkville, Mo.; treasurer, J. F. Diemer, Liberty, Mo.

The tone of the convention was in a marked degree optimistic, and the prospect before the society is better defined than ever before. Without entering into details it may be said that the society plans to enlist the co-operation of the extension department and the home economics department of the university, and to inaugurate a campaign to popularize the production, consumption, and sale of honey on the farms of Missouri. A convention for next year is already projected in which it is hoped that an interest far greater in kind and in extent than anything in the past will be manifested and maintained.

Parkville, Mo.

A CABINET FOR HOFFMAN FRAMES

BY M. B. WHITE

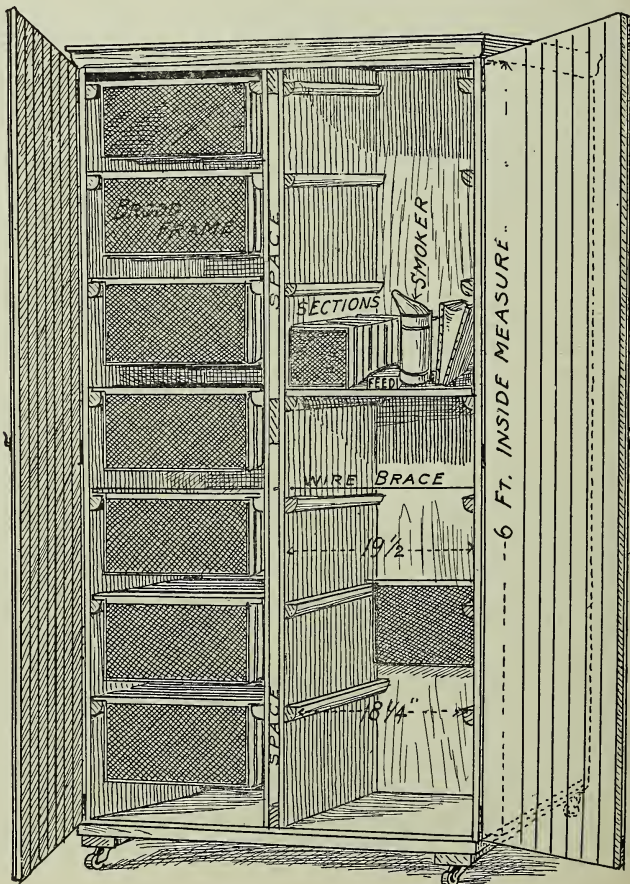
Several years ago I visited a friend who gave me my start in the honey industry. While at his home I noticed a chest in his honey-house similar to the one here illustrated. I immediately proceeded to make one like it, which has about one-fourth the capacity of the one I now present. It was not very long until it was too small, so I have just completed the new one.

Following are specifications:

18 pieces 1 in. by 4 in. by 8 ft., used for top, bottom, and back; 12 pieces 1 in. by 4 in. by 6 ft., two sides; 12 pieces, 1 in. by 1 in. by 6 ft., doors; 1 piece 1 in. by 4 in. by 14 ft., braces; 1 piece 1 in. by 4 in. by 8 ft., braces.

The work took me about a day and a half, working irregularly without anything to go by except a rough drawing I made and the actual frames. I had no tools but a saw, hammer, square, and plane.

Waco, Texas.



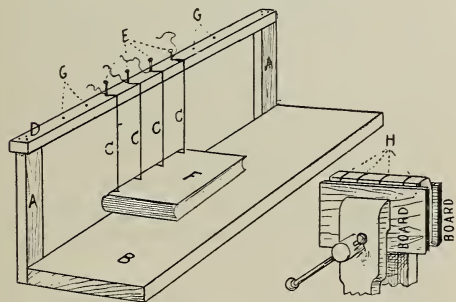
HOW TO BIND GLEANINGS

BY M. H. TEISBERG

GLEANINGS contains so many valuable suggestions that it is well worth while to save the back numbers for future reference. I think all will agree that the most satisfactory way to keep them is to have them bound in book form. My way of binding is so satisfactory, and so easily and cheaply done, that I should like to pass it on. Almost every beekeeper has all the necessary implements and materials except the stitching-frame, which I will describe.

An ordinary carpenter's bench-vise can be used as a press. Proceed as follows:

Arrange the twenty-four numbers that constitute one volume of GLEANINGS in order, and remove the advertising pages from all except the first and last numbers. Leave three or four advertising pages on each of the latter to serve as fly leaves. If all the advertising pages were left on, the completed book would be too bulky.



AA, uprights; B, baseboard; CCCC, cords;
D, top-bar; EEEE, nails or tacks.

This done, true up the top and back edges of the volume and put it in your bench-vise between two smooth boards and screw up tight. The back side of the volume should be up, and should project about a quarter of an inch outside of the boards. Take a saw and make four cuts across the back of the volume so as to divide the back into five more or less equal parts. Guide-marks may be made first with a pencil if you like. Make the cuts one-sixteenth to one-eighth of an inch deep. Before sawing remove any of the wire stitches that are in the way by twisting them out with the point of a knife.

The next step is to sew your book together, and for this purpose you will need a stitching-frame. Almost any one can make a frame good enough in a few minutes like this:

Take a piece of plank or board six inches wide, or wider, and a foot or a foot and a half long, and to one side of it nail a frame six or eight inches high and as long as the plank. This frame is simply two uprights with a straight stick nailed across the top. Stretch stout cords between the top of the frame and the side of the plank, spacing them to correspond with the notches you sawed in the back of the volume.

You are now ready to stitch your book together. First tie your thread to the second cord from the top; then take the last number of the year and place your right hand between the middle leaves. Insert the needle in the second notch from the top, and draw the thread thru. Then put it thru the third notch on that side of the third cord which is furthest away from you. Reinsert it in the same notch, but on the side of the cord which is *nearest* to you. Put it out and in at the fourth notch in the same manner, then go back to the third, second, and first notches, and finally out where you started. If you have drawn the thread up snugly the cords will be drawn into the notches. Proceed in like manner with the remaining numbers, being careful to have them in proper order. Remove the book from the frame by cutting the cords, leaving the ends about one and a half inches long.

Now screw the book up tight in the bench-vise as before, and hammer the back down smooth. It should have a rounded shape. Paste a strip of muslin on the back, letting the sides overlap about an inch. This strip, together with the cords, forms the hinge on which the book opens. Let it dry in the vise all night.

The cover is made of pasteboard covered with any kind of cloth you please. A careful examination of any cloth-bound book will give a good idea of how it should be made. Paste it together. Fasten the cover to the book by pasting the outside fly leaves, the ends of the cords, and the overlapping edges of the back strip to it. Leave it in the press to dry or the covers will curl. Flour paste is good for this work. To spread it smoothly use a kitchen-knife.

Books bound in this way open flat without danger of breaking. They are much stronger than ordinary books, and I am sure that mine will last a lifetime.

As to the time it takes, the work is such a pleasure that one will be almost sorry

when it is finished. The stitching of a volume of GLEANINGS takes about an hour. Making the cover will take about another; so that, with making the sawcuts in the back, stringing the cords on the frame, pasting, etc., the time needed will probably not be far from three hours. Of course this does not include the time needed for the paste

to dry; but you can be doing other things in the mean time, so it is hardly fair to count that. If you are a stickler for smooth edges you can take the book to a printing-shop and have it trimmed. This, if done at all, should be done just after taking from the stitching-frame.

Ashby, Minn.

DIFFERENCE BETWEEN PIPING AND QUAHKING

BY J. D. ELLIS

I have been greatly interested in the discussion between you and Dr. Miller in regard to "quahking of queens." A few years ago I was walking home from the postoffice with a queen in my pocket. Suddenly near a swampy wood I heard what I supposed was a duck quacking. It began in loud slow tone, and ended in quick low tone. I and my companion with me said, "Wild ducks," and hunted for them. None were found, and we proceeded. Further on we heard the same sound again, and at once we said "wild ducks." But this was in high open field, and we were puzzled. Neither of us had ever heard that the queen or any bee ever made a sound. After close listening we discovered that the sound came from my pocket. We took out the cage, listened, and were astounded. We told it around the country, but none would believe us. You may call it "piping" if you wish, but we certainly thought it was ducks. In boyhood days I have often seen a partridge "drumming." Standing on a log it flaps its wings without moving, first slow and loud, but getting more rapid and faint. I have wondered if the queen does that.

Montreal, Quebec.

[The following letter from the editor to Dr. Miller will explain:]

Dr. C. C. Miller:—I enclose a letter from Rev. J. D. Ellis, Montreal, Quebec, in regard to the quahking of queens. This is the first instance I have heard of where the quahking was made outside of the queen-cell. He describes it so minutely and so accurately that I am inclined to think the queen made this sound inside the cage. Did you ever hear or know anything of this kind? I have always been under the impression that the piping that you refer to was a very different sound from the quahking. The quahking is more like the quacking of ducks and the piping like zeep-zeep-zeep—that is to say, sounds like a very minute, infinitesimal (if I may so express it) squeal. The piping that I have referred to, as queens answering each other back and forth in our office from separate queen-cages, was the sound of the infinitesimal trumpet—a very minute sound like some of the upper notes of a violin. The quahking, as I understand it, would sound like the coarser notes, the coarsest that the ordinary

small violin can give; in fact, I believe that a good violinist could produce either sound that the queen gives. I think there may be some misunderstanding between some of our subscribers and yourself and myself as to the actual difference between quahking and piping. If you have any circumlocution of language that will describe either I hope you will do so for the benefit of Mr. Ellis or any one else.

E. R. Root.

[To this Dr. Miller replies:]

Note that Mr. J. D. Ellis says he had never heard that the queen makes *any* sound; so as this was the first time he ever heard a sound from a queen he would not discriminate closely between piping and quahking. He calls the noise "quacking," but he *describes* piping, for he says it began in a slow tone and ended in a quick tone. The beginning of quahking has always seemed to me as if the queen were hurried, although I think the tones are of equal length. Certainly I don't believe any one would think that quahking begins in a slow tone, while piping does.

I feel quite confident it was piping Mr. Ellis heard, and that there is yet no proof that a queen ever quahks outside a cell, although the difference is not all—I think not mainly—made by being in or out of a cell.

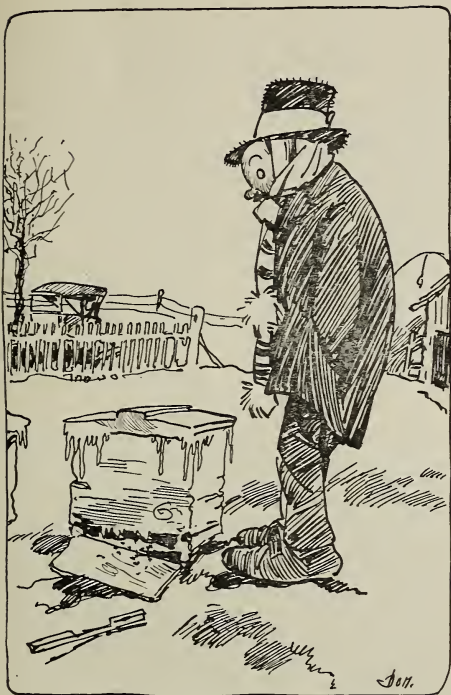
If you will wait till next summer, and then listen patiently some evening to quahking and piping, I think you will say that quahking is distinctly different from piping, and that the difference is one that cannot be made by confinement in a cell.

After reading again your letter I will say that you are right about the difference in the two sounds, except when you speak of piping as being a "minute sound." That would convey the impression that it is a very faint sound. It is sharp, shrill, piercing, but not at all minute, for I've heard it distinctly several feet away from the hive. I think you are right that a violin could well imitate both sounds. When a queen begins quahking in reply to the piping of another queen, the quahking, as I remember it, *seems* louder than the piping, but I doubt if it really is, for, as already said, I've heard piping at quite a distance from the hive, and I don't remember to have heard at the same distance the quahking reply. Your word "squeal" is not a bad one to describe piping.

C. C. MILLER.

[Has any one of our readers ever heard a queen "quahk" outside of a queen-cell? Piping never is the same as the sound of wild ducks in the distance. We still incline to the opinion that Mr. Ellis actually heard "quahking."—Ed.]

Heads of Grain From Different Fields



The Backlot Buzzer

BY J. H. DONAHEY

The fellow who says he don't pay much attention to his bees, but figures to keep a hive or two for a little table honey, seldom gets more than he figures on.

Report of Michigan's Fiftieth Meeting

With an attendance of almost two hundred, the Michigan Beekeepers' Association held its fiftieth annual convention at Grand Rapids, December 15, 16. It does not fall to the lot of every beekeepers' association to enjoy a fiftieth anniversary, and the consensus of opinion of those present was that Michigan held a worthy celebration, and one that has left pleasant memories.

The meeting was marked by several interesting and novel features. One of these was the banquet supper, so kindly provided by the G. B. Lewis Co., Watertown, Wis., and by the A. G. Woodman Co., Grand Rapids, Mich. Another feature was the giving of medals.

In place of the usual half-dozen entries there were over forty different exhibits; and in the comb-honey and light-extracted-honey classes competition was very keen. The medals are cell-shaped, one inch and a half in diameter, and bear on one side the portrait of L. L. Langstroth, suggested by Dr. Phillips.

The medals were provided as follows: The manufacturers of bee-supplies, The G. B. Lewis Co., The A. I. Root Co., C. P. Dadant & Sons, R. & E. C. Porter, The Marshfield Mfg. Co., The Kretchmer Mfg. Co., and the Gus Dittmer Co., gave the gold medal. This medal is ten-karat solid gold, and known as the manufacturer's medal, value \$50.00.

The Michigan jobbers in bee supplies: The A. G. Woodman Co., M. H. Hunt & Son, E. D. Soper, and The Beekeepers' Review per E. D. Townsend, provided the silver medal. This medal is known as the jobber's medal, value \$20.00.

The bronze medal is provided by the association, and is known as the association medal.

The medals were much appreciated, and declared appropriate and beautiful in design, and created much interest during the meeting. Many of the beemen present decided that the winners would have to put up the finest of exhibits next year or the medals would change hands.

While there were over forty entries at this convention we are preparing for many more exhibits at the next meeting, in Lansing. The object in providing the medals will, no doubt, be attained. That is an exhibit worthy the name and the State of Michigan, and one that the public will come to see.

For our fifty-first meeting we hope to combine more features that will make this side of the convention a big drawing card to the general public.

Among our many visitors were some prominent beemen from other parts, including: Dr. E. F. Phillips, Prof. Jager, John C. Bull, George Williams, R. F. Holtermann, J. Danzenbaker, Dr. Kohn, and others.

The interest in the meetings was well sustained thruout, and the attendance at the closing session was equal to that of the earlier sessions.

President Running in his address alluded to the value of the summer apiary demonstrations, and touched upon the possibility of some of the Smith Lever funds being used for apiary demonstration work.

The program was full of valuable and instructive papers, which contained some excellent suggestions and ideas as follows:

E. D. Townsend, "Running Outyards for Extracted Honey."

Morley Pettit, "Notes from the Year's Work."

C. P. Dadant, "Size of the Brood-chamber."

Prof. J. H. Haughey, "Phases of Queen-breeding."

Prof. Jager, "Beekeeping in Minnesota."

A. H. Guernsey, "Transferring Bees."

R. F. Holtermann, "Question-box."

Dr. E. F. Phillips, "Some Lessons of the Last Half-century."

O. H. L. Wernicke, "Beekeeping as a Prison Industry, and its Reformative Influence."

Ira D. Bartlett, "Business Principles and System a Big Asset in the Success of the Apiarist."

Dr. E. F. Phillips, "Outdoor Wintering."

Morley Pettit, "The Bee Business in Canada as seen by a trip through Different Provinces."

The winners of the challenge medals were: Mr. and Mrs. Floyd Markham, Ypsilanti, manufacturers' gold medal; E. E. Coveyou, Petoskey, jobbers' silver medal; David Running, Filion, association bronze medal. Medals have to be won three times before they become the property of the exhibitor.

Lansing was chosen as the place for the next meeting. The A. I. Root Co. and M. H. Hunt & Son announced that they would be hosts to the beekeepers at that time, when they would serve a banquet supper. Those present at the banquet at Grand Rapids will remember what a pleasant time was spent, and visions of another good time at the Lansing meeting are already rising and will no doubt materialize at that time.

F. Eric Millen, Sec.

East Lansing, Mich.

Eastern Massachusetts Meeting

The January meeting of the Eastern Massachusetts Society of Beekeepers was held in Boston on January 8. There were 36 members present, and four visitors from Rhode Island.

Mr. Allen Latham, of Norwichtown, Ct., was the first speaker on the list. His subject was "Building up Nuclei into Full Colonies." Mr. Frank C. Pellett, of Atlantic, Iowa, was given a royal reception when he was announced as the second speaker, and talked to the society on Latham's subject, after which questions were put to both these men, and a very profitable discussion ensued.

Boston.

Benjamin P. Sands.

Death of Delos Wood

The attached clipping was taken from the Los Angeles "Times" of January 7: . . .

BEE EXPERT DIES.

SANTA BARBARA, Jan. 6.—Delos Wood, pioneer apiarist of this county and Ventura, died here today of heart failure superinduced by a severe cold. Wood is acknowledged as a bee expert of the state. For thirty-two years he had been in the business.

Mr. Delos Wood was highly respected by the best of the bee fraternity thruout California; has been very active as a member of the different beekeepers' organizations; was a writer of no mean talent on bee topics; one of the main stays of the California State Beekeepers' Association, and a regular correspondent of the "Western Honey Bee." He was an honorary member of the State Association, and president of the Ventura County Beekeepers' Club.

All beekeepers knowing Mr. Wood will feel the loss of this grand old man who retained his good nature and bright laughing ways almost to the last day of his life.

Los Angeles, Cal.

Geo. L. Emerson.

Michigan Beekeeper Passes

Mr. William E. Forbes, of Plainwell, Mich., died January 2, 1916, at the age of 75. At one time Mr. Forbes had as many as 200 colonies, and was one of the most careful and methodical beekeepers in his state. He has kept bees for over forty years, and was an expert in bee management. He disposed of most of his bees last year to a fellow beekeeper. Mr. Forbes was one of the oldest members of the State Association, and attended a great many of its meetings. The beekeeping fraternity has lost a good craftsman and a true friend.

A Beekeeper.

In a Cold Country

This district is well on toward Hudson's Bay, and is pretty cold now and then. Today, Jan. 5, it is about 30 below zero—the coldest day this winter so far.

I find Italian bees do well here in a normal season. We have a good deal of small timber in this part of the country, and the bluffs in which this timber is contained have an abundance of wild flowers, together with wild strawberries and raspberries. Last summer a three-frame nucleus built up to ten frames full, and yielded me 60 full sections besides. Moreover, I had to rob the brood-chamber of some honey during early August, in order to give them room. Altogether I got about 80 lbs. from this colony.

In 1904-'5 I bought three nuclei for New Liskeard, in Temiskaming. These nuclei filled seven hives that season, and gave me about 100 lbs. of comb honey besides. The climate and conditions there are about the same as here, so you see it is hard to place a limit to the producing area of our friend the bee.

Melfort, Sask., Jan. 5.

Geo. Weaver.

The Loss by Weight when Feeding

I do not think that Mrs. Allen will find out just what she wants to by your own and Dr. Miller's answer in the January 1st number. If a colony is short 10 lbs. of honey she wishes to know how much she will have to feed to make up 10 lbs. of sealed stores. Dr. Miller's answer of 5/7 of a pound of sugar for every pound of stores short would mean 10 lbs. of syrup in the feeder.

This thing was discussed in Gleanings some time ago, and the most of the beekeepers agreed that there is a loss between feeder and sealed stores—that to make a pound of sealed stores a pound of sugar should be fed, no matter how much water is added.

Grosvenordale, Ct.

Ernest Ryant.

A. I. Root

OUR HOMES

Editor

Thou shalt not kill.—EXODUS 20:13.

Thou shalt not commit adultery.—EXODUS 20:14.

There is none other name under heaven, given among men, whereby we must be saved.—ACTS 4:12.

A few years ago a book came out entitled, I think, "The Traffic in Girls," and it made quite a sensation, especially among certain lines of people. Later on came another book, perhaps from the same author, entitled, "The Traffic in Little Girls." Since then our nation has been stirred up by the war against the "white-slave" traffic, and some of us began to think it was pretty well done away with; but every little while our daily papers in the great cities have given occasional glimpses to the effect that things are not *always* as they look on the outside.

Dear friends, it is my sad duty to show you in this Home paper that something worse than the traffic in *little* girls is still going on in some of our great cities—something *worse*, if possible, than the great war across the seas, and, I might almost say, worse than the liquor business, were it not that it is a part and an outcome of this same hellish combination. I mean that there is a traffic going on in poor innocent and helpless motherless and fatherless *babies*—babes from a day old to a week old, and that these poor helpless and homeless infants are being *murdered*, not only by the hundreds but by the *thousands*. How devoutly I wish some one could tell me it is not true, and that I have been misinformed! It is a rather long story that leads up to it, but is something the whole wide world should know about. The gradual steps that have led up to it should be a warning to those who are about to take the first steps that look so harmless, *out* of the "straight and narrow path."

Some good friend mailed me a supplement to the Baltimore *Star*, dated Dec. 20. The large heading reads:

Starting Facts in Report of Governor's Vice Commission; Social Fabric of Baltimore City Seriously Undermined; Leaders of Professional, Church, and Social Circles Involved in Exposure; Traffic in Girls and Babies is Astounding; Open Vice Conditions Pale before Orgies of the So-called Best People.

A group of leading physicians, social workers, and business men of Maryland, named about three years ago by Gov. Phillips Lee Goldsborough to study and report on vice conditions in Baltimore city and the state at large, have just affixed their signatures and forwarded to the Chief Executive of Maryland one of the most remarkable documents ever compiled in the history of the country.

Below I have clipped brief extracts, taken here and there, which might indicate

that it would be nothing strange if the Almighty should (if there is no let up) send down fire and brimstone on Baltimore as he did on Sodom and Gomorrah.

The tremendous social sore is of such great scope that members of the commission consider publication of the general conditions of the same importance to the community as would be the vital necessity of the surgeon's knife to the individual in an extreme appendicitis case.

VAST PUBLIC MENACE.

Starting out from the report with a horrible leer into the face of the community are the facts that a heavy percentage of the local population is suffering in some form from the most horrible and loathsome disease known to the medical world, and that most inadequate facilities are provided by the hospitals for the treatment of this public menace.

Men and women of all races and colors are in the grip of this monster, and even children are by no means free from its grasp.

Thru the efforts of Dr. Walker, these horrible facts so aroused the sympathies of John D. Rockefeller, Jr., that the latter has contributed \$6500 for each of the next three years to maintain a clinic at the John Hopkins Hospital to handle this disease.

A separate examination of the professionally fast women showed that 96.61 per cent indicated the presence of this terrible disease or one only slightly less loathsome.

"We found that," continues the report, "according to our rough estimate, 24 per cent of the girls in these houses are feeble-minded; that is, have not intelligence enough really to realize what they are doing. It is nothing short of monstrous for such persons to be found in such a life; they are absolutely nonresistant, and are an easy prey to conscienceless madams and victims of the degraded appetites which many men possess.

"There are inadequate facilities for the detention and segregation of feeble-minded boys and girls above 16 years of age. The practical significance of their being at large is that when free they are allowed to propagate their kind. We have numerous examples of feeble-minded girls who have had two or three children, and some who have had four or five. Their offspring are nearly always of the same type. It is of economical value to the state to put a stop to such propagation, to say nothing of the humane aspect of the case."

"It is this woman's business to acquire and to exhibit the youngest and most innocent girls that can be procured," says the report. "The greater their delicacy or charm or beauty the greater profit she can count upon their yielding her. Once they are captured and under her sinister subjection, she sees that they are on hand and accessible whether they are sick or well, in season and out of season.

The above is only part of the preliminary to the "Traffic in Babies." Omitting several columns of details, we come to the following:

"There are two well-known institutions in Baltimore which will receive infants immediately after their birth and keep them permanently. The parents, by paying to either of these institutions from \$100 to \$125, are relieved of all responsibility, and relinquish all right and claim to the child. The

mortality in these institutions varies from 75 to 95 per cent. The mortality of infants nursed by their mothers is less than 10 per cent.

CALL IT MURDER.

"We do not attempt in this study to settle the many complex problems relating to the illegitimate; but we believe that the facts show that society's method in many instances is one of repression and virtual murder. This is a harsh word, we grant, and would fain substitute a gentler term; but after all is said and done, that which we have reported is virtual murder, and slow and cowardly at that. It would be far more humane to kill these babies by striking them on the heads with a hammer than to place them in institutions where four-fifths of them succumb within a few weeks of malnutrition and infectious diseases. It is a few weeks of suffering, a few weeks of going down to death by a process that is slower than the hammer, but in most instances just as sure. Hedged in by our system of shams and our fabric of lies, we refuse to call it killing them; we dignify it by the softer name, the smoother term, of putting them into institutions where they will be cared for. But nearly all of them die, and many of us know that they die, and, moreover, may think that it is better that they *should* die.

"All of this is done in the effort to preserve a family's good name; to prevent a girl's reputation from being smirched, to save the man in the case from facing the consequences of his act. All together, it is a well-organized hushing-up by a system of subterfuges and repression in order that the certain individuals shall not have to face openly what they have done."

And now comes the sad final summing-up:

"A calculation was made concerning the infants under one month of age that had been placed in the institution by the city for 1900 to 1914 and had not been removed, except by death, under a period of six months; among all these children there was not a single survivor—a mortality of 100 per cent."

Under another section, devoted to general conditions, the report states:

"The dead infants are buried in a large hole, which serves to accommodate from 75 to 100. From time to time, as they die, their bodies are placed in the hole and covered with a few shovelfuls of earth. When the hole is filled with bodies another hole is dug alongside of it, and the bodies of infants that have been buried for several years are taken out and their bones thrown away to make room for new burials. In a small plot of ground it is estimated that about 5000 infants have been buried.

I read the above to Mrs. Root just before retiring; and in thinking it over I decided that all the police in the world, and all the legislation, and, in fact, nothing would avail Baltimore but a visitation of the Holy Spirit; and then our last text came to mind—"None other name under heaven." When the wicked men and women who are responsible for the untimely death of these innocent babies shall be *converted* and go down on their knees before an angry God, then will help come to Baltimore and other cities like her. Finally I knelt down and prayed the good Lord to move Billy Sunday to go to Baltimore. At that time I had no knowledge he had any such plan in mind; but next mail brought the welcome

news that the great city was already "up in arms," preparing the way for his coming. Below is the heading of an editorial from the Baltimore *Sun*:

15,000 kneel in prayer; 1250 meetings held to pave way for Billy Sunday; all classes represented; devotions last for half an hour, and blessing is asked on evangelist and work.

Some of you may say, "Why, brother Root, your prayer was not answered in the above, for the matter was planned long before you prayed." To which I answer, from Isaiah 65:24, "Before they call I will answer; and while they are yet speaking, I will hear."

Let us look at the matter a little. Men and women break God's holy command against adultery; and to conceal the crime they commit murder or pay money to some one *else* to do the murdering. It is not grown-up men who can protect themselves, but helpless *babies—their own offspring*, because they are respectable people (or claim to be), and dare not own their own children. We read about and sing about "the heathen in their blindness bow down to wood and stone;" but are there any *worse* heathen in the whole wide world than in "Glorious America," "the land of the free and the home of the brave"? May God give Billy Sunday grace to realize the size of the task he has undertaken.

"CHIGGERS" AND REDBUGS.

As to "chiggers," I am sometimes attacked by them, but not often, and never, I think, when in my work clothes. This I ascribe to the fact that, when dressed for work, I always use the spring-steel trousers-guards commonly worn by bicyclists. The guards are well worth wearing, too, to keep out dust, tickle-grass, weed stubble, and other rubbish when one is working in the farm or garden, tramping the roads, or exploring the woods and fields.

Carthage, Mo.

BENJAMIN C. AUTEN.

I think very likely the trousers-guards, or, in the absence of them, tying a string around the ankles, would largely keep off these troublesome insects. I would suggest, however, that at the same time you put kerosene around the tops of your shoes, as I have frequently had the redbugs get around on to my feet below the ankles. Perhaps I have failed to mention that there is seldom any trouble from these insects if you keep away from the wild grass and other vegetation in the woods. Where the land is under cultivation there is seldom any trouble of this kind. Keeping down grass and weeds around the home will very much aid in keeping the premises clear of such pests.

HIGH-PRESSURE GARDENING

SOME GLIMPSES OF OUR FLORIDA HOME AND GARDEN.

When we came here the first week in November I made haste to plant some potatoes. The only good sprouted seed to be found on the market was \$2.25 per bushel. Cut No. 1 shows them 40 days after planting. It is now (Dec. 31) about 50 days, and some of the hills are 2 feet high, covering the ground. There are a few potatoes already nearly the size of small hens' eggs—no bugs, no blight, not even a flea-beetle, to make the leaves full of small holes; in fact, I do not think I ever saw *perfect* potato foliage until I came to Florida. In the background you see one of the mulberry trees I have so often spoken of; also a banana, slightly touched by the frost—the one or two that we have had, but none so far to hurt anything except sweet potatoes.*

* At the left of the house in the background is the great rubber tree. Three years ago last June it was just coming out of the ground; now it is 20 feet high and 50 feet wide in its spread of branches. Mrs. Root says I shall have to move the house or the tree.



FIG. 1.—Red Bliss Triumph potatoes planted Nov. 11.
Photographed 40 days later.

Cut No. 2 shows another bed of potatoes about 30 days after planting. Thru the center of the bed is a row of loquat plums, set out only a year ago, but all containing more or less bloom. On the left is a clump of the roselle bushes I have written about. The foliage has dropped off, but the "fruit" is still good. We are having it every day with cut-up oranges. Just behind them is an orange-tree full of fruit.

Cut No. 4 is my favorite Royal grapefruit, still bending with its load of fruit in spite of the fact that one or more are taken every day for my "fruit supper" with a couple of apples brought from Ohio.



FIG. 2.—Bliss Triumph potatoes 30 days after planting.



FIG. 3.—Buckwheat sowed in November. Photographed after only 30 days.

Cut No. 3 is explained by the two letters below. I found the bees on the blossoms the first time on Christmas.

Mr. A. I. Root:—I am a beekeeper in a small way. I have 40 stands for comb honey. I take GLEANINGS, and like it much. I read very carefully your experiments in Florida. I am trying to propagate buckwheat that will stand sun and wind, and not blast. I have seed from the third selection, and think it quite an improvement. I should like to send you some seed for you to plant in Florida; and if it produces a good crop, I should want you to send the seed to me for next year's planting, and would send you some more seed ground here. In that way I could get two selections in *one year*.

Nelson, Pa.

FRED H. SELPH.

Later.—I sent you the buckwheat yesterday by mail. I would drill it about three inches apart, and use some fertilizer. I find that 3-8-10 fertilizer is about the thing for buckwheat. The buckwheat I sent is all from one stalk, 1113 kernels.

FRED H. SELPH.

SWEET CLOVER IN CALIFORNIA; SOMETHING ABOUT THE WAY IN WHICH IT IS BRINGING UP BARREN SOIL.

I am sending your herewith an article clipped from the *Redlands Daily Facts* under date of Sept. 28, that seems to me to contain so many valuable things about sweet clover that it should have as wide a circulation as possible. There seems to be no limit to the possibilities of this plant in building up and rejuvenating old soil. Indeed, it is surely becoming known as a factor in the welfare of future generations.

Redlands, Cal., Oct. 20.

P. C. CHADWICK.

A DESPISED WEED PROVES PRECIOUS BOON TO FARMERS.

The story of how this unappreciated native "weed" has been found to increase the yield of subsequent crops, following its incorporation into the soil, to a greater extent than any other legume ever tested in California, is told by W. M. Mertz, superintendent of cultivations of the Citrus Experiment Station of the University of California at Riverside, in a circular on "*Mellilotus Indica* as a Green-manure Crop in Southern California," just published by the University of California, and obtainable free by writing to the College of Agriculture at the University.

Here is related the story of how for many years past the University of California has been testing a wide variety of "cover crops" at Riverside and elsewhere. Various clovers, vetches, and other leg-

umes, as well as rye, barley, etc., have been grown as a winter cover crop, and then plowed under in the spring, in order, by green manuring, to introduce nitrogen into the soil, aid the activity of useful soil bacteria, and improve the texture, humus content, and general condition of the soil. Then potatoes, corn, sugar-beets, and other crops have been grown on the test plots to find out how much the fertility of the soil has been improved by this treatment.

The resulting increase in fertility has been most gratifying. Land on which common vetch had been

plowed under gave an increased yield of 18.7 per cent; burr clover, 30.4 per cent; and Canadian peas, 43.4 per cent.

But when sweet clover was grown and plowed under, the yield of the test crops following showed an actual average increase of 64.8 per cent.

This is nearly half as great again an increase of yield as it has been possible to obtain by plowing under cover crops of rye or barley, and applying also 1902 pounds of nitrate of soda or 1188 pounds of dried blood per acre.



FIG. 4.—Our Royal grapefruit tree close to the dining-room door. "Short-cut from producer to consumer."

Another remarkable merit of this new cover crop, sweet clover, is that it is extremely effective in preventing "plow-sole," or irrigation hardpan, an ailment to which a large proportion of irrigated orchard soils in California are liable. Frequent cultivations of dry pulverized soils, together with frequent irrigation, tend to wash down the fine clay particles and deposit them in a dense, hard layer of varying thickness just under the cultivated area, and thus soils become impervious to water. Sweet clover, however, though an annual plant, in six months sends its roots deep down, often as much as eight feet. This great root system is extremely useful to the orchardist, keeping the deep layers of the soil in good physical condition and opened up for irrigation.

The increased production of a crop up to 64 per cent is certainly wonderful if there is not some mistake in the figures. It illustrates again how much there is to be discovered all round about us if we go to work with faith and enthusiasm to develop God's gifts.

SWEET CLOVER.

From Cowley County, Kansas, comes an authentic report of a man who pastured 35 head of cattle weighing 500 pounds apiece; 6 sows and 33 suckling pigs on nine acres of sweet clover from April 10 to May 6. The sweet clover had been seeded in the spring of 1914, and was, therefore, but one year old. On May 26, after the stock had been removed for twenty days, the sweet clover was growing rapidly, and had reached the height of eight inches. From Harvey County, Kansas, comes an equally authentic report of a man who, up until May 22, had been pasturing his milk cows on sweet clover that was but one year old. So well had these cows been doing on the sweet clover that the owner was delighted with the results and the quantity of

milk received, and quite likely those cows are still in that same field. On that particular farm there was plenty of alfalfa; but owing to losses caused from bloating, the owner was afraid to risk valuable cows in an alfalfa field.

We should like very much to hear from others who have made this same observation, and should like to have any other interesting facts for or against sweet clover which will be of value to the man who is thinking about seeding this crop.

It seems absolutely certain that sweet clover will find a place on many grain-belt farms, which cannot be filled by either red clover or alfalfa. It is, therefore, important that we get as many facts from one another as possible.—*Farmer and Stockman.*

SWEET CLOVER—35 ACRES.

I am very much interested in the new sweet clover. Will you kindly send me a few seeds when the crop is harvested? The farmers are just beginning to see the value of this wonderful plant in this part of the state, and one friend of mine has put in thirty-five acres this year after trying three acres last year with which he was so well pleased that he planted the larger field.

Princeton, Ill., July 21. G. S. RICHARDSON.

THE AVOCADO PEAR IN JAMAICA.

I am sending you under separate cover a seed of the avocado pear. You mentioned the alligator pear in GLEANINGS in the early part of the year. I thought you would like a seed. This seed is not of the alligator kind, but they grow here. The avocado pear grows here without cultivation of any kind. When there is a good crop a lot of the fruit is fed to pigs when ripe. At present we can get two fair-sized ones for one cent and a half. The alligator pear is called so because of its shape.

HERBERT HOLLI.

Brown's Town, Jamaica.

TEMPERANCE

GOD'S KINGDOM COMING.

I have been for some time past making clippings from our exchange periodicals in regard to the "temperance wave," and now there are so many that I thought at the time *must* have a place that they would pretty nearly fill a single issue, and even if we did so, there would be two troubles: First, before they would get to Medina and get in print they would be out of date. Secondly, many of you would find you had read the same thing, or a later version of it, already.

On the last day of 1915 we found in our Bradentown daily the following:

DRY TERRITORY TAKES IN SEVEN MORE STATES;
OVER 3000 SALOONS AND MANY BREWERIES,
DISTILLERIES, AND WHOLESALE HOUSES
WILL CLOSE.

WASHINGTON, Dec. 31.—Seven states become dry at midnight tonight. Over three thousand saloons and a large number of breweries, distilleries, and wholesale liquor-houses will be closed.

The states are South Carolina, Iowa, Colorado, Oregon, Washington, Idaho, and Arkansas.

The Idaho laws are said to be the most drastic in the country. It makes the possession of any kind of liquor a crime.

From the *Plain Dealer* of Jan. 1 I clip as below:

SEWER GOES ON DRUNK.

CHARLESTON, W. Va., Dec. 31.—Twenty-five thousand pints of whisky, brandy, and rum confiscated by the State Prohibition Department, were emptied into a sewer here yesterday. The process required three hours' work by four men who worked in relays to prevent being overcome by the fumes.

And now comes one of my "happy surprises."

The *Cleveland Plain Dealer* has heretofore favored license rather than prohibition; and it has also carried "booze" advertisements, at least to some extent. In the daily for Jan. 4 I could hardly believe my eyes when I read the following:

HOME MAP-MAKING.

While belligerency is making over the map of Europe, prohibition is making over that of the United States. The first day of the new year deserves a high place in the annals of the drys.

Seven states were added to prohibition territory with the dawning of Saturday, bringing the total number to nineteen wherein the manufacture and sale of intoxicants has been outlawed. From one

ocean to the other and from the Gulf to Maine the dry territory stretches, with only a break here and there, where a wet or local-option state intervenes.

The closing of so much territory to the liquor business on New Year's day marked the culmination of an exceptionally successful year for the dries. Into state after state they carried their fight on the saloon, meeting their opponents in legislatures or before the people, and usually worsting them. In Ohio they met defeat when the dry amendment to the constitution was rejected in November, but that was one of the few reverses they met during the year.

And the fight of the dries will continue unabated during 1916.

Six states are to vote on complete prohibition before the year ends; and a seventh, Florida, may put the issue to the test. In addition to these contests for statewide prohibition the dries will continue to press their enemies' strongholds upon the issue of local option. Four states remain which have so far refused to enact laws establishing local option. In Pennsylvania, the greatest of the four, not even the campaign pledge of a popular governor and the governor's later strenuous efforts to make the pledge good, were sufficient to secure the enactment of such a law.

It is not impossible that, by the end of the new year, half the states of the Union will have completely outlawed the traffic in intoxicants. Even the possibility is significant of the trend of popular thought on the problem of the saloon.

After reading the above, it occurred to me I had not, for some time, noticed any "booze" advertisements in the *Plain Dealer*, and I have just searched over several issues, and *don't find one*. For years past I have been pained because not one of our Cleveland dailies seemed to have the courage to follow other great cities and announce "No more whisky advertisements." May God be praised if it is really true that our leading daily has decided to take the lead.

WHAT "BOOZE" MAY DO

The superintendent of our Sunday-school recently told us about a young man of his acquaintance who gave great promise, not only of being a great scholar but of being one who would likely be a blessing to his age and nation. A member of our Bible class told us further that he became an expert civil engineer, and was employed by the government to survey for miles along the Atlantic coast, and, if I am correct, he did a large and important work along the coast of Florida. Well, this man, highly connected, of such education and ability, got to drinking, lost his position, and, in spite of all his great circle of friends and relatives could do, went down and down.

Recently here in Bradentown, out on the dock, we had a bad fire. A hotel built near the boat-landing, on piles driven into the water, was burned. You might think that, with water below and on every side, it would be an easy matter for the fire company. Not so. It was only by wading in

the water that the firemen could work. Now read the clipping below from our Bradentown daily about this same expert civil engineer.

The body was burned beyond the possibility of certain recognition aside from peculiarities of the teeth, which were recognized.

J. P. Petrousa, proprietor of the hotel, stated today that Gray was a roomer at the hotel, that he occupied the room with an employee, who awakened him just before the employe took the plunge to safety in the waters of Manatee River.

It was reported his helper not only "awakened him," but that he got him *out of bed*, and he must have *gone back again* into the burning building. This is nothing so very strange. Do you recall what I said about the boy who persisted on lying across the track before the coming train? I will tell you something more about that. In taking him toward home we came to a cattle-guard. I cautioned him, and tried to help him get across safely. He struck me a brutal blow, then tried to *run* across, slipped down between the sharp-edged timbers, and when I got him out the blood was trickling down into both his shoes.*

Away back in that good old book we are told "It biteth like a serpent and stingeth like an adder," and, again, "Yea, thou shalt be as he that lieth down in the midst of the sea, or as he that lieth on the top of a mast."

MICHIGAN PAPER TELLS WHAT RESULTS FROM GETTING RID OF SALOONS.

BENTON HARBOR, Mich., Dec. 1.—An editorial recently appearing in the *News-Palladium*, of this city, presents at once an emphatic statement of the results of getting rid of the local saloon, and an honest man's argument for the extension of those benefits to the whole state. The paper says:

"Our experience here in Berrien County should convince every thoughtful and intelligent person that the abolishment of the sale of liquor by law is the best possible thing that can happen. Right here in Benton Harbor we have noted the effect in the way of a more orderly city, more happy homes, brighter-faced children, and many more cheerful women; and not only this, but there are scores who, previous to this important change, were scantily clad and poorly fed, who now enjoy the necessities and many of the luxuries of life.

"If a single drunkard were saved, and one family made happy, then the great reform would be worth all that it has cost us. But when there are scores of them, and when our streets are practically cleared of drunkards, the number of prisoners in our county jail reduced, and the expense of carrying on criminal litigation in this county cut down to a minimum, it would seem that all fair-minded people would be convinced of the desirability of the blessed state of affairs that we now enjoy; and it would also seem that all unselfish people residing within the borders of this county would be willing to work with zeal and energy to bring about statewide prohibition in order that every one within the borders of Michigan may be as blessed as we are ourselves."

* After this, when I supposed he had gone home, I found him *once more*, lying across the railroad track.



**Engine
Power
costs less
—NOW—**

By using 1916 Model

WITTE ENGINES

**Gasoline,
Kerosene**

**Gas,
Distillate.**

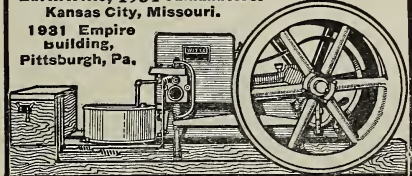
Buy Direct; Cash or Easy Terms

Stationary engines, 2, 3, 4, 6, 8, 12, 16 and 22 H.P., less than \$17.50 per horse-power. 6 H.P., only \$97.75, F. O. B. Factory. Portable engines and Saw-Rig outfits proportionally low. Proven highest quality for 20 years. Before you arrange to try any engine, at any price, read my free book, "How to Judge Engines." This book shows you how to save and make money with an engine, whether you buy of me or not. Write me today—my nearest office.

Ed. H. Witte, 1931 Oakland Ave.

Kansas City, Missouri.

**1931 Empire
building,
Pittsburgh, Pa.**



KITSELMAN FENCE



**HORSE-HIGH, BULL-
STRONG, PIG-TIGHT**

Made of Open Hearth wire, heavily galvanized—a strong, durable, long-lasting, rust-resisting fence. Sold direct to the Farmer at wire mill prices.

Here's a few of our big values:

26-inch Hog Fence - 12 cts. a rod.

47-inch Farm Fence - 18 cts. a rod.

48-inch Poultry Fence - 24 cts. a rod.

Our big Catalog of fence values shows 100 styles and heights of Farm, Poultry and Lawn Fence at money-saving prices. Write for it to-day. It's free.

KITSELMAN BROS. Box 21 Muncie, Ind.



RELIABLE POWER

Nearly 100,000 Galloway engines in daily use. Long stroke, large bore, heavy weight. Built for hard, continuous engine-users' satisfaction. All sizes, prices, styles. Modern design, few parts, best material, skilled labor. Positively not over-rated. Sold direct. Engine book free. Investigate and compare before you buy.

WM. GALLOWAY CO., Box 765 WATERLOO, IOWA

98⁷⁵

77⁵⁰

39⁵⁰

34⁷⁵

26⁷⁵

Rider Agents Wanted

in each town to ride and show a new 1916 model "RANGER" bicycle. Write for our liberal terms. **DELIVERED FREE on approval and 30 days' trial.** Send for big free catalog and particulars of most marvelous offer ever made on a bicycle. You will be astonished at our low prices and remarkable terms. **FACTORY CLEARING SALE**—a limited number of old models of various makes, \$7 to \$12. A few good second-hand wheels \$3 to \$8. Write if you want a bargain. **Tires, lamps, wheels, sundries and repair parts for all makes of bicycles, at half usual prices. Write us before buying.** **MEAD CYCLE CO., DEPT. T113, CHICAGO**

1916 Model

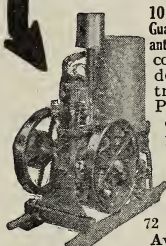
ONLY 3 MOVING PARTS SANDOW ENGINES

Over 20,000 in use for general farm work, irrigation, operating binders, railroad track cars, portable outfit, etc. Particularly adapted for electric lighting, which requires absolutely uniform power.

30 DAYS Free Trial

10 Year

Guarantee



Run on kerosene, distillate, gasoline, etc. No cranking. Run in either direction. Reversible while running. Water cooled. Light in weight. Simple design eliminates engine trouble. Child can operate. Price low. Handsome new engine book tells you why you should have a Sandow. Write for it today.

Detroit Motor Car Supply Co.

Detroit, Mich.

72 Canton Avenue

NOT



TO PAY

us till you've tried the new **\$10.00 STRANSKY**

We send it on **FREE TRIAL** with Records. If you buy, pay \$1.00 a week and own a Phonograph for **LESS THAN HALF** price of equally good machines. Thousands used. **STRANSKY MFG. CO. 41E, Warren St. N.Y.**

25 TIMES World's Champion Belle City



Incubator 402,000 in use. Get the whole story told by the Championship Winners in my big free book, "Hatching Facts." With book comes full description of incubator and brooder—my 10-year money-back guarantee—low prices—full particulars—and my **\$1300.00 Gold Offers.** Learn how I paid one user \$156, another \$50, many from \$45 down. Write me today for **Free Book.** **Jim Rohan, Pres.**

Belle City Incubator Co.

Box 69, Racine, Wis.



Freight Prepaid. 1, 2 or 3 Months' Home Test

"Best" Hand Lantern



A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. **Big Profits.** Write for Catalog. **THE BEST LIGHT CO. 306 E. 5th St., Canton, O.**

Myers SPRAY PUMPS

For Hand or Power Operation

A good spray pump is indispensable about the premises. A hundred uses will suggest themselves. The Outfit here illustrated is a fine one for spraying and can also be used for painting, white-washing, disinfecting, extinguishing fires, washing windows, buggies, automobiles, etc.

There are many different kinds of MYERS SPRAY PUMPS for both hand and power operation. Our catalog SP 16, which we will send you on request, shows all styles.

Myers Spray Pumps are made with a Patented Cog Gear Head and operate one-third easier than pumps with the old-style handle.



A HANDY PORTABLE OUTFIT FOR USE ABOUT THE BARN ORCHARD AND GARDEN.

Tank is made of galvanized iron and holds 12 1-2 gallons.

F. E. MYERS & BRO.

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Get FREE Chicken Book



Our big, illustrated, 1916 Year-Book—"Profits in Poultry Keeping"—will help you make more money with fowls. Tells how to raise chicks, get more eggs and make larger profits with less work. Learn about

Cyphers-Built Incubators
Sold at Low Prices

Quality unequalled. Big hatches and a guarantee that protects you; backed by 20 years of leadership. We want you to have a copy of this great Guide for Poultry Raisers. Write for it today—free.

CYPHERS INCUBATOR CO., Dept. 69, Buffalo, N.Y.
New York Chicago Dallas
Boston Kansas City Oakland

50 Best Paying Varieties

Hardy Northern raised Chickens, Ducks, Geese and Turkeys. Pure-bred heaviest laying strains. Fowls, Eggs, Incubators, all at low prices. Large new Poultry Book and Breeders' Complete Guide Free.

W. A. WEBER, Box 964, Mankato Minn.



58 BREEDS. Pure-bred Chickens, Ducks, Geese and Turkeys. Hardy, northern raised, vigorous and most beautiful. Fowls, eggs and incubators at low prices. America's Pioneer Poultry Farm; 21 years exp. Large fine Annual Poultry book and Catalog free.

F. A. NEUBERT, Box 693, Mankato, Minn.

Spray Your Crops

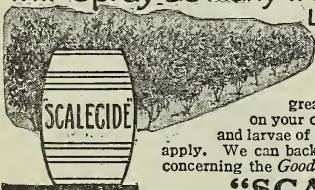
KANT-KLOG SPRAYER

9 sizes of sprays from one nozzle. Starts or stops instantly—saves solution and work. Send for catalog. Agents wanted.

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207 Broadway Rochester, N. Y.

One Barrel of "Scalecide"

Will Spray as many Trees as Three Barrels of Lime Sulfur



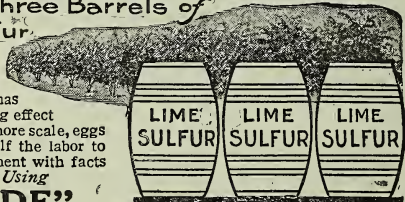
"Scalecide" has greater invigorating effect on your orchard—kills more scale, eggs and larvae of insects with half the labor to apply. We can back up this statement with facts concerning the *Good Results from Using*

"SCALECIDE"

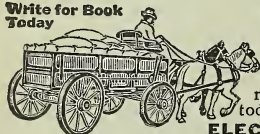
Send for our illustrated booklet—"Proof of The Pudding". Tells how "Scalecide" will positively destroy San Jose and Cottony Maple Scale, Pear Psylla, Leaf Roller, etc., without injury to the trees. Write today for this FREE book and also our booklet—"Spraying Simplified". Learn the dollars and cents value of "Scalecide, The Tree Saver".

Our Service Department can furnish everything you need for the orchard at prices which save you money. Tell us your needs.

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High or low wheels—steel or wood—wide or narrow tires. Steel or wood wheels to fit any running gear. Wagon parts of all kinds. Write today for free catalog illustrated in colors.

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60 BREEDS Valuable Poultry Book Free—New 100-page 22nd Annual Edition. Fine purebred chickens, ducks, geese and turkeys—Northern raised, hardy, beautiful. Fowls, Eggs and Incubators, low prices. America's greatest poultry farm. Write today for Free Book.

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Latest Book: Profitable Poultry. Finest A published; 144 pages, 20 pretty pictures and beautiful color plates. Complete instructions how to breed, hatch, feed by improved methods, describes our busy Poultry Farm with 53 pure-bred varieties, including **Runner Ducks**. Lowest price list on fowls, eggs, incubators, sprouters, etc. This great 50c book mailed for only 5 cents.

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Give the Quickest, Biggest and Surest Profits of Anything You Can Grow

The work is so easy and simple that even beginners make big profits from the start. Our *free book* tells how.

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produce big crops of big, fancy berries from June until November. Light freezing does not affect their fruiting.

The berries are in great demand. Price ranges from 30 to 45 cents per quart. Three months after plants are set, your profits begin. Our *free book* tells the rest.

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will add beauty, pleasure and profit to your home. Get our *free book* and learn how to supply your entire family with delicious strawberries the year round without cost.

Great Crops of Strawberries and How to Grow Them,

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Fully explains the Kellogg Way. 64 pages of common sense, actual experience, strawberry facts, pictures galore. Kellogg's *free book*, Kellogg's *free service* and Kellogg *Pedigree Plants* insure your success. Our *book* is worth its weight in gold—costs you nothing. Send for copy today. A postal will do. R. M. KELLOGG CO. Box 400 Three Rivers, Michigan



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GOOD AS CAN BE GROWN
Prices Below All Others

I will give a lot of new sorts free with every order I fill. Buy and test. Return if not O. K.—money refunded.

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Over 700 illustrations of vegetables and flowers. Send yours and your neighbors' addresses.

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The greatest forage plant that grows. Superior to all as a fertilizer. Equal to Alfalfa for hay. Excels for pasture. Builds up worn-out soil quickly and produces immense crops, worth from \$50 to \$125 per acre. Easy to start, grows everywhere, on all soils. Write today for our Big 100-page free catalog and circular about unhulled and scarified hulled sweet clover. We can save you money on best tested, guaranteed seed. Sample Free.

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850,000 GRAPE-VINES

69 varieties. Also Small Fruits, Trees, etc. Best rooted stock. Genuine, cheap. 2 sample vines mailed for 10c. Descriptive catalog free. LEWIS ROESCH, Box H, Fredonia, N. Y.

1916 Nursery Guide

America's Authority
Send Today! Plant Early!

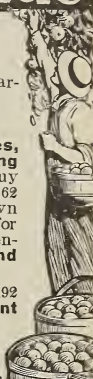
Everything for Orchard, Lawn, and Garden described and pictured.

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Ornamentals, Seeds, Vines, Berry Bushes, Shade Trees, Nuts, Evergreens, Bedding Plants, etc. No risk. Save money—buy direct from America's leading growers: 62 years' experience. Hardy, Lake Erie grown stock; robust, fibrous root systems, best for transplanting. Over 1200 acres; 48 green-houses; 7 kinds of soil. Safe arrival and satisfaction guaranteed.

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SCARFF'S Fruit Catalog



Every reader should have a copy. Over 27 years growing the finest Strawberries, raspberries, Blackberries, Currants, Gooseberries, Grapevines, etc. All kinds of Fruit Trees, Ornamental Shrubs, Privets, Barberry, Asparagus, Rhubarb, Horseradish, and Farm Seed.

Our Nursery and Farms comprise over 1200 acres in the fertile Miami Valley. Our 40-page catalog is yours for the asking. It is full of just what you want to know about fruit-growing.

W. N. SCARFF, Lock Box 50, New Carlisle, O.

Plant STRAWBERRIES

We ship plants safely to any part of the United States. Have the VERY BEST for farm or GARDEN CULTURE. Also a complete line of Raspberry, Blackberry, Gooseberry, Currant, Grapes. Acres of Everbearing Strawberry and Raspberry plants, just what you want. Greatest money-maker before the American public. Descriptive catalog free. Write now.

BRIDGMAN NURSERY COMPANY
Box 96, Bridgman, Mich.

Cultivate Horseradish....

Garden, Field, or Farm

Increasing Demand; Large Profits

100 Root Sets, with Full Information, \$1

Write for list of our \$1 Friend Makers, consisting of all kinds of fruit trees, berries, and roses. Money wanted in payment for nursery stock,

VALLEY FARM CO., NEWBURGH, N. Y.



Free for Testing

A pair of mated EVERBEARING STRAWBERRY PLANTS FREE if you will report as to your success with them. Will bear loads of big, red berries from June to November. We have counted 450 berries, blossoms and buds on a single plant. A postal will bring the plants, also enough seed of the new CEREAL FETERITA to plant a rod square of ground. Also a pkt. of perennial ORIENTAL POPPY seed. Send 10 cts for mailing expense or not, as you please. Write today and get acquainted with

THE GARDNER NURSERY COMPANY
Box 749, Oaage, Iowa.

NEW STRAWBERRIES CATALOG

FREE to all Reliable, interesting and instructive—All about the New Everbearers and other important varieties. Address C. N. FLANSBURGH & SON, JACKSON, MICH.

"Next Door to Everything"

Reads the advertisement of a great railway terminal. "Next door to everything in Beedom" fittingly describes our location. In the bee-supply business, distance is measured, not in miles but in hours and minutes; and the house that gives first service is nearest the beekeeper.

Tho but a short distance from the geographical center of Ohio we are yet so near to West Virginia and Pennsylvania, and so closely connected by transportation lines, that we are truly "next door."

Some idea of our importance as a distributing center may be gained from the fact that more than fifty mails arrive and as many depart daily, and almost a hundred freight and express trains enter and leave the city every twenty-four hours.

Then our location in the city is most accessible. Our office and warerooms are just off the main business thoroughfare, in the heart of the wholesale district, and only a stone's throw from depots, post-office, and the large retail stores. Beekeepers and their friends are earnestly invited to make our store their headquarters when in the city.

The best goods and service justify us in promising our customers the fullest measure of satisfaction.

February cash orders are subject to a special discount of 2 per cent off catalog prices. Clover looks most promising for the coming season, and it is the part of wise foresight to prepare carefully the bees for winter, and anticipate all possible requirements.

E. W. Peirce,

22 So. Third St.

Zanesville, Ohio

The Eyes, Ears, and Mouth are Near Together

To see birds, hear their music, and taste honey are a happy trio.

There is a new and enlarged
Bird Department
in the
Guide to Nature

Send twenty-five cents for a four-months' trial subscription

Address: ARCADIA, Sound Beach, Conn.

This Washer Must Pay for Itself

A MAN tried to sell me a horse once. He said it was a fine horse and had nothing the matter with it. I wanted a fine horse. But I didn't know anything about horses much. And I didn't know the man very well either.



So I told him I wanted to try the horse for a month. He said, "All right, but pay me first, and I'll give you back your money if the horse isn't all right."

Well, I didn't like that. I was afraid the horse wasn't "all right," and that I might have to whistle for my money if I once parted with it. So I didn't buy horse, and about the man badly. Now this set me thinking.

You see I make Washing Machines—the "100 Gravity" Washer. And I said to myself, lots of people may think about my washing-machine as I thought about the horse and about the man who owned it.

But I'll never know, because they wouldn't write and tell me. You see, I sell my Washing Machines by mail. I have sold over half a million that way. So, thought I, it is only fair enough to let people try my Washing Machines for a month, before they pay for them, just as I wanted to try the horse.

Now, I know what our "1900 Gravity" Washer will do. I know it will wash the clothes, without wearing or tearing them, in less than half the time they can be washed by hand or by any other machine.

I know it will wash a tubful of very dirty clothes in Six Minutes. I know no other machine ever invented can do that, without wearing out the clothes.

Our "1909 Gravity" Washer does the work so easy that a child can run it almost as well as a strong woman, and it doesn't wear the clothes, fray the edges, nor break buttons the way all other machines do.

It just drives soapy water clear thru the fibers of the clothes as a force pump might.

So, said I to myself, I will do with my "1900 Gravity" Washer what I wanted the man to do with the horse. Only I won't wait for people to ask me. I'll offer first, and I'll make good the offer every time.

Let me send you a "1900 Gravity" Washer on a month's free trial. I'll pay the freight out of my own pocket, and if you don't want the machine after you've used it a month, I'll take it back, and pay the freight too. Surely that is fair enough, isn't it? Doesn't it prove that the "1900 Gravity" Washer must be all that I say it is?

And you can pay me out of what it saves for you. It will save its whole cost in a few months in wear and tear on the clothes alone. And then it will save 50 cents to 75 cents a week over that in wash-woman's wages. If you keep the machine after the month's trial, I'll let you pay for it out of what it saves you. If it saves you 60 cents a week, send me 50 cents a week till paid for. I'll take that cheerfully, and I'll wait for my money until the machine itself earns the balance.

Drop me a line today, and let me send you a book about the "1900 Gravity" Washer that washes clothes in six minutes.

Address me this way—H. L. Barker, 1622 Court St., Binghamton, N. Y. If you live in Canada, address 1900 Washer Co., 357 Yonge St., Toronto, Ontario.

Classified Advertisements

Notices will be inserted in these classified columns for 25 cents per line. Advertisements intended for this department cannot be less than two lines, and should not exceed five lines, and you must say you want your advertisement in the classified columns or we will not be responsible for errors.

HONEY AND WAX FOR SALE

Clover honey of the finest quality in new 60-lb. cans at 9 cts. per lb. J. P. MOORE, Morgan, Ky.

FOR SALE.—White-clover comb honey, extracted, in 60-lb. cans. HENRY HETTEL, Marine, Ill.

Choice well-ripened clover honey in 60-lb. cans. J. F. MOORE, Tiffin, Ohio.

Fancy extracted clover honey at 9 cts. per lb. Sample 10 cts. JOS. HANKE, Port Washington, Wis.

Clover-heartsease-goldenrod blend. Light amber, best quality, prices right. Sample, 10 cts. E. S. MILLER, Valparaiso, Ind.

FOR SALE.—Choice-grade well-ripened clover honey, good grade for bottling; put up in 60-lb. cans. GEO. M. SOWARBY, Cato, N. Y.

FOR SALE.—Basswood and clover extracted honey in 160-lb. kegs and 60-lb. cans. B. B. COGGSHALL, Groton, N. Y.

FOR SALE.—10,000 lbs. white-clover extracted honey in new 60-lb. net tin cans, 2 in a case, for shipment, sample free. Address D. R. TOWNSEND, Northstar, Mich.

Amber honey, 7¼ cts. per lb.; sage honey, 8½; clover honey, 10 cts. per lb. in 60-lb. cans. White comb honey, 12 to 16 cts., box by the case. I. J. STRINGHAM, 105 Park Place, New York.

Finest clover honey, 8½ cts.; buckwheat, 8, in cases of two 60-lb. cans; 6-lb. can postpaid in second zone, \$1.00. Satisfaction guaranteed. EARL RULISON, Rt. 1, Amsterdam, N. Y.

FOR SALE.—Finest quality of white-clover-basswood blend extracted honey in new 60-lb. cans. State how much you can use, and I will quote you price. L. S. GRIGGS, 711 Avon St., Flint, Mich.

FOR SALE.—Poplar, locust, and blackberry extracted honey; 800 lbs. in new 60-lb. cans at \$5.00 a can. The lot at special price. Write W. A. CALDWELL, Galts Mills, Va.

Special prices on a quantity of near-water-white white-clover extracted honey in new cans and cases. Money cannot buy better honey than this. A free sample will convince you. E. D. TOWNSEND, Northstar, Mich.

FOR SALE.—Water-white alfalfa, white clover, amber alfalfa, and amber fall honey in 60-lb. cans or smaller packages. Amber fall honey is of our own extracting, and can also be furnished in barrels. Write for sample of kind desired, and state quantity you can use. DADANT & SONS, Hamilton, Ill.

RASPBERRY HONEY.—Thoroughly ripened by the bees, very thick, and of fine flavor; in new 60-lb. tin cans, \$6.00 per can. We have a little slightly mixed with buckwheat at \$5.00 a can. Sample of either kind by mail for 10 cts., which may be applied on order for honey. Write for prices on large lots. ELMER HUTCHINSON, Rt. 2, Lake City, Mich.

FOR SALE.—Amber extracted honey, well-ripened and mild-flavored, 6 cts. Honey-dew honey for baking or bee-food (cheaper than sugar) 5 cts. by the case; ten cases 4½; 25-case lots, 4 cts. per pound; two sixty-pound cans to the case; also have some fall comb honey for \$2.25 to \$2.75 per case of 24 sections. H. G. QUIRIN, Bellevue, Ohio.

FOR SALE.—Choice white comb honey; 24 4 x 5 sections to the case; \$3.50 per case, f. o. b. Waymart, Pa. J. D. HULL & BRO., Honesdale, Pa.

Fine new-crop clover and basswood honey at 9 cts. in new 60-lb. cans with 3-in. screws. Also in gallons and smaller, for family and store trade. State quantity wanted. C. J. BALDRIDGE, Homestead Farm, Kendaia, N. Y.

HONEY AND WAX WANTED

Beeswax bought and sold. STROHMEYER & ARPE Co., 139 Franklin St., New York City.

WANTED.—Bulk comb, section, and extracted honey; state price and submit sample. J. E. HARRIS, Morristown, Tenn.

WANTED.—Your own beeswax worked into "Weed Process" foundation at reasonable prices. SUPERIOR HONEY Co., Ogden, Utah. "Everything in bee supplies."

FOR SALE

HONEY LABELS at money-saving prices. Samples free. LIBERTY PUB. Co., Sta. D, box 4E, Cleveland, O.

HONEY LABELS.—All styles. Catalog with prices free. EASTERN LABEL Co., Clintonville, Ct.

FOR SALE.—A full line of Root's goods at Root's prices. A. L. HEALY, Mayaguez, Porto Rico.

FOR SALE.—Circular-saw mandrels and emery-wheel stands. CHARLES A. HENRY, Eden, N. Y.

FOR SALE.—Motorcycle Twin Indian, late model, fine condition, \$110. Write LEE BRUTUS, Pine Village, Ind.

FOR SALE.—70 T. tin supers; used one season. bargain if sold at once. G. LEON ALLEN, Rt. 2, Ulster, Pa.

Beekeepers, let us send you our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. WHITE MFG. Co., Greenville, Tex.

SEED CORN.—Highest germination; best varieties other farm seed; 1200 acres; 40-page catalog. W. N. SCARFF, New Carlisle, Ohio.

Good second-hand 60-pound cans, 25 cts. per case of two cans, f. o. b. Cincinnati. Terms cash. C. H. W. WEBER & Co., Cincinnati, Ohio.

FOR SALE.—Gramm alfalfa and yellow biennial sweet clover, dwarf, grows in all soils and climates. JOHN FREDRICH, Sturgis, S. D.

FOR SALE.—Cedar or pine dovetailed hives, also full line of supplies, including Dadant's foundation. Write for catalog. A. E. BURDICK, Sunnyside, Wash.

FOR SALE.—53 supers with T tins and separators; 2000 4¼ new beeway sections, cheap. WM. ROBINSON, Rt. D, LaFayette, Ind.

FOR SALE.—If you can use 100 lbs. or more of Dadant's foundation, any grade, direct from factory, write me for reduced price. F. W. LESSER, Rt. 3, East Syracuse, N. Y.

THE ROOT CANADIAN HOUSE, 185 Wright Ave., Toronto, Ont., successors to the Chas. E. Hopper Co. Full line of Root's goods; also made-in-Canada goods. Extractors and engines; GLEANINGS and other bee-journals; Prairie State incubators. Get the best. Catalog and price list free.

FOR SALE.—Beekeepers' supplies, such as winter cases, hives, sections, covers, bottoms, bodies, supers, brood-frames of every description, shipping-cases, section-holders, comb foundation, smokers, etc. Get my prices before placing your order. R. H. SCHMIDT, Rt. 3, Sheboygan, Wis.

FOR SALE.—Friction-top pails, 5-lb. size, per 100, \$4.50; 500, \$21.25; 10-lb. size, per 100, \$6.25; 500, \$30.00. Low prices on other sizes in bulk. Also furnished in reshipping-cases. Shipped from Chicago. A. G. WOODMAN CO., Grand Rapids, Mich.

PATENTS

PATENTS THAT PAY. \$600,812.00 clients made. Protect your ideas. Send data. Advice and two wonderful Guide Books free. Highest references. E. E. VROOMAN & Co., 834 F, Washington, D. C.

POULTRY

BABY CHICKS.—Barrows contest entries furnish us a son to head one pen; also Wycoff stock. Prices reasonable. LINESVILLE PULLET HATCHERY, Linesville, Pa.

FOR SALE.—Baby chicks, S. C. W. Leghorns, hatched from good utility stock on free range, \$10 per 100; also eggs at 75 cts. per 15. O. C. RHODES, Rt. 4, Urbana, Ohio.

Poultry Paper, 44 125-page periodical, up to date, tells all you want to know about care and management of poultry for pleasure or profit; four months for 10 cents.

POULTRY ADVOCATE, Dept. 56, Syracuse, N. Y.

\$\$\$\$ IN PIGEONS! Start raising squabs for market or breeding purposes. Make big profits with our Jumbo pigeons. We teach you. Large, free, illustrated, instructive circulars.

PROVIDENCE SQUAB CO., Providence, R. I.

REAL ESTATE

I am part owner of a 183-acre farm between Cleveland and Akron; fine location; best markets; good land; offered at a sacrifice price to close estate. Can use a small place, with or without apiary, in exchange for my interest; balance, part cash, part long time. L. A. TRUXELL, Peninsula, Ohio.

SOUTHERN LANDS are low in price, but high in productive value, make two to four crops a year, and give largest profits in grain, vegetables, fruits, live stock and dairying. Unsurpassed climate, good markets. Publications on request. M. V. RICHARDS, Commissioner, Room 27, Southern Railway, Washington, D. C.

VIRGINIA AND NORTH CAROLINA FARMS, \$15.00 per acre and up. Easy payments. Fruit, Dairy, Stock. Mild Climate. Raise Spring Lambs for early market. On Railroad. Best markets near by. Write for farm lists, information, and N. & W. Rwy. Homeseeker, all free. F. H. LABAUME, Agr'l Agt. Norfolk & Western Ry., 246 N. & W. Bldg., Roanoke, Va.

WANTS AND EXCHANGES

WANTED.—Bees located in Idaho. Describe, and state price. IRA DYE, 1 Ellery Ave., Irvington, N. J.

WANTED.—To buy or lease, 100 to 200 colonies of bees and location. JACOB PROBST, East Nicolaus, Cal.

WANTED.—Good bulk comb or section honey.

WM. ROBINSON, Rt. D, LaFayette, Ind.

WANTED.—To exchange a six-room house, barns, some fruit, lawn, water, for bees.

MRS. BALL, 212 Filmore St., Denver, Col.

WANTED.—100 colonies bees in good condition to work on shares, season 1916, either comb or extracted honey, with privilege of buying; prefer them in Oakland Co. or Wayne Co.

EARL F. TOWNSEND, Milford, Mich.

WANTED.—Second-hand automatic reversible four-frame extractor, in good condition.

C. H. TRUE, Edgewood, Ia.

WANTED.—To buy an apiary and small place in the north-central states, near good school. 69853 Box 163, Montfort, Wis.

WANTED.—To buy or rent 200 to 500 colonies bees; references and capital furnished. 69855, care of GLEANINGS, Medina, Ohio.

WANTED.—To exchange lath mill and bolter, 24-inch attrition feed-grinder, Economist steam-boiler, 12 H.P., for machinery to make honey-sections or engine lathe. GEO. RALL MFG. CO., Galesville, Wis.

WANTED.—Party with \$300 to help finance apiary. To buy bees by pound from South by May 10 and make ready for flow coming in June. Good clover and basswood location. See my ad. in Jan. 15 issue. JUDSON A. JONES, Continental, Ohio.

If you desire to exchange your surplus, strong, healthy, striped, mixed, black, or yellow-bellied colonies for a few green-backed dollars, within 600 miles, south or west, state hives, condition, and price. W. A. SMALL, Waltham, Mass.

WANTED.—To furnish every beekeeper within 500 miles of Boise, Idaho, with the best and cheapest bee supplies on the market, *quality considered*. Send me your order or a list of your requirements for 1916. Our catalog and price list will be mailed to you free. Order early and get the discounts. C. E. SHRIVER, Boise, Idaho.

BEEES AND QUEENS

See our large ad. elsewhere in GLEANINGS.

M. C. BERRY & Co., Hayneville, Ala.

FOR SALE.—Fifty colonies of bees.

J. R. MARYE, Bunceton, Mo.

FOR SALE.—175 colonies of bees with good location. F. M. SNIDER, Collbran, Col.

FOR SALE.—200 colonies of bees; 5 acres land with orchard. N. L. ANDERSON, bx 386, Spearfish, N. D.

FOR SALE.—600 colonies well-kept bees. All modern equipment. Write WM. CRAVENS, Rt. 7, San Antonio, Texas.

FOR SALE.—Three-banded Italian queens for season of 1916. Watch for large ad. with prices later. N. FOREHAND, Ft. Deposit, Ala.

Bees by the pound shipped anywhere in the U. S. or Canada. Safe arrival guaranteed. Capacity, 100 lbs. a day. M. C. BERRY & Co., Hayneville, Ala.

FOR SALE, or will take partner that is willing to go half, 120 colonies Italian bees, house, tools, empty hives, 160 acres land, homesteading, well, \$1000 or go half. J. C. HICKSON, Bisby, Ariz.

FOR SALE.—25 hives Italian bees in Danzenbaker hives, \$4.00 per hive, with supers; nine colonies in eight-frame hives; all in good condition; no disease. B. F. HARFORD, bx 63, Asherville, Mitchell Co., Kan.

Three-banded Italians, ready May and June, \$1.00 each; 6 for \$5.00; 12 for \$9.00; after June, 75 cts. each; 6 for \$4.25; 12 for \$8.00. For larger lots write CURD WALKER, Jellico, Tenn.

FOR SALE.—Three-banded Italian queens. Nuclei a specialty. Bees by the pound. My stock will please you as it has others. Let me book your order for spring delivery. Write for circular and price list. J. L. LEATH, Corinth, Miss.

We are booking orders for bees in 2-lb. packages, \$1.75; and 3-lb. packages, \$2.50. Young untested Italian queens, 75 cts. each, or \$8.00 per doz. Bees are free from disease, and safe delivery guaranteed. Orders delivered after April 20. Write for circular. IRISH & GRESSMAN, Jesup, Ga.

FOR SALE.—Golden Italian queens that produce golden bees; for gentleness and honey-gathering they are equal to any. Every queen guaranteed. Price \$1; 6 for \$5. WM. S. BARNETT, Barnetts, Va.

Shipped one order of 409 lbs of bees; 133 3-lb., and 2 5-lb. packages with queens. They go thru to party in Ontario, Canada, in fine shape.

M. C. BERRY & Co.,
Successors to Brown & Berry, Hayneville, Ala.

Golden Italian queens that produce golden bees; the highest kind, gentle, and as good honey-gatherers as can be found; each, \$1.00; 6, \$5.00; tested, \$2.00; breeders, \$5.00 to \$10.00.

J. B. BROCKWELL, Barnetts, Va.

FOR SALE.—Italian bees, 1 lb. with queen, \$2.25; 1 frame with queen, \$2.00. Queens, 75 cts. each. Safe delivery guaranteed; 30-page catalog with beginners' outfit for stamp. THE DEROY TAYLOR CO., Newark, N. Y. (formerly Lyons).

Phelps' Golden Italian Queens combine the qualities you want. They are great honey-gatherers, beautiful and gentle. Mated, \$1.00; six, \$5.00; tested, \$3.00; breeders, \$5.00 and \$10.00. C. W. PHELPS & SON, Wilcox St., Binghamton, N. Y.

M. C. Berry & Co., Successors to Brown & Berry, are booking orders for spring delivery. This firm is the largest and most successful shipper of Select Bred Three-banded Italian queens and bees in packages in the South. Write for circular and price list.
M. C. BERRY & Co., Hayneville, Ala.

FOR SALE.—400 colonies Moore strain bees in good location. Combs built on full sheets of foundation. Everything in first-class shape. Principal source of honey is alfalfa. Located in the Rio Grande Valley, under the largest irrigation project in the United States.

THE CROWN APIARIES, Mesilla Park, N. M.

QUEENS.—Italians exclusively; golden or leather-colored. One select untested, \$1.00; 6, \$4.25; 12, \$8.00. Tested, \$1.25. Best breeder, \$5.00. Early swarms of young bees in light screen cage a specialty. One 1-lb. package, \$1.25; one 2-lb., \$2.25; queen extra. For ten or more, write for price. Also nuclei and full colonies. I am looking orders now, with 10 per cent deposit for delivery March 15 and after. Safe arrival, prompt service, and satisfaction I guarantee. Circular free.

J. E. WING, 155 Schiele Ave., San Jose, Cal.

Largest apiaries in Southwest for sale, in lots to suit purchaser up to 1300 colonies. Nine good locations. Up-to-date equipment. Located in the heart of large alfalfa region of southern New Mexico. Assured of perpetual water supply from recently completed Government irrigation reservoir. Excellent climate. Bees winter well out of doors. No spring dwindling. Three miles from State Agricultural College and town of 5000. Owners have other interests, and can't devote time to the bees, so will sacrifice them for quick sale. Correspondence solicited.
METCALFE & PARKS, Mesilla, N. M.

FOR SALE.—1-lb. swarm (shipping weight 3 lbs.) Italian bees, \$1.50, without queen, March 20 or later. Untested Italian queen, 75 cts. after April 10; tested Italian queen, \$1.25 after March 20. No reduction for less than 50; 1 to 49 2-lb. bees in package, no queen, \$2.50 each; 50 to 500 2-lb. bees in packages, no queen, \$2.37. Bred from best honey-gatherers; no disease. Safe arrival and satisfaction guaranteed. We are now booking orders with ¼ payment, balance before shipment. "The early swarms get the honey." We can care for your wants for 1916. W. D. ACHORD, successful package shipper and queen-breeder, Fitzpatrick, Ala., U. S. A.

HELP WANTED

WANTED.—Young man to work with bees season of 1916. No tobacco-user need apply; or will sell half interest to right party with small payment down. M. C. SILSBEE, Rt. 3, Cohocton, N. Y.

WANTED.—Two men to work with bees the coming season; little experience necessary; full particulars by first letter. B. B. COGGSHALL, Groton, N. Y.

WANTED.—Young man to work with bees the coming season; little experience necessary. State experience, and wages expected in first letter.
E. L. LANE, Trumansburg, N. Y.

WANTED.—Beeman immediately. Can give steady employment to right man. Give reference, state experience, and wages wanted.

W. J. STAHMANN & Co., Clint, Texas.

WANTED.—Energetic young man (preferably married) who has had experience with bees, and understands queen-rearing, to take charge of apiary of 200 colonies with opportunity to increase to 400. Steady employment on ranch when bees do not require attention; must have farm experience. Salary and percentage of honey. F. L. HOGUE, Lompoc, Cal.

WANTED.—For large and growing business, farm-raised man of good habits, experienced in extracted-honey production, and willing to help at light farming when not busy with apicultural work. Good permanent position for right party. One acquainted with autos preferred. Particulars on application. Address 36602 "OUTYARDS," Gleanings in Bee Culture, Medina, Ohio.

SITUATIONS WANTED

WANTED.—A situation as assistant queen-breeder or for both comb and extracted honey; an expert at both; will go either north or south.

S. B. BARDEN, General Delivery, Philadelphia, Pa.

Married man, age 37, wants position as apiarist; has handled bees since childhood. Understands either comb or extracted production, and queen-rearing in full colony.

J. C. ADAMS, 20th and Rose, Detroit, Mich.

BEEKEEPERS' DIRECTORY

Well-bred bees and queens. Hives and supplies.
J. H. M. COOK, 70 Cortlandt St., New York.

Nutmeg Italian queens, leather color, \$1.00; 12 for \$10.00 return mail.

A. W. YATES, 3 Chapman St., Hartford, Ct.

QUIRIN's superior northern-bred Italian bees and queens are hardy, and will please you. More than twenty years a breeder. Orders booked now. Free circular.

H. G. QUIRIN, Bellevue, Ohio

QUEENS.—Improved three-banded Italian bred for business, June 1 to Nov. 15, untested queens, 75 cts. each; dozen, \$8.00; select, \$1.00 each; dozen, \$10.00; tested queens, \$1.25 each; dozen, \$12.00. Safe arrival and satisfaction guaranteed.

H. C. CLEMONS, Boyd, Ky.

You can have your beeswax made into *best quality* foundation; also the wax from old combs or slumgum. We get it all out. On shares or very cheap for cash. New factory. Old liberal terms. Cheapest and handiest transportation for all Northern beekeepers. You always get your own wax back.
J. J. ANGUS 454 Fulton St., Grand Haven, Mich.

Convention Notices

A meeting of the New Jersey Beekeepers' Association will be held in the Entomology Building, Bleeker Place, New Brunswick, N. J., on Feb. 10, 11, 1916. Mrs. Geo. Demuth, of the Bureau of Entomology, Washington, will address the meeting. Others will discuss various phases of the business. Don't fail to hear the man who wrote Farmers' Bulletin No. 503.

New Egypt, N. J.

E. G. CARR, Sec.

THE NATIONAL BEEKEEPERS' ASSOCIATION CONVENTION, HOTEL SHERMAN, RANDOLPH AND CLARK STS., CHICAGO, ILL., FEB. 22, 23, 24, 1916.

PROGRAM

MORNING SESSION, 9 O'CLOCK, FEB. 22.

Delegates to the National Beekeepers' Association convention will present their credentials to the secretary at the Hotel Sherman before 9 A. M., Feb. 22. Opening of convention,

by Dr. Burton N. Gates, President
Appointment of committees
Reports of officers and committees
Discussion, "The Work of the National Association"
Paper, State Organization,

by Benjamin P. Sands, Boston, Mass.

AFTERNOON SESSION, 1:45.

Address, Extending the Use of Honey in Cooking,
by E. H. Bruner, Chicago
Address, Teaching the Value of Honey in Our Public Schools,
by Geo. W. Williams, Redkey, Ind.

Paper, Advertising and Selling Ripe Honey,
by R. M. Spencer, Ventura, Cal.
Paper, Use and Misuse of Prime Swarms,
by Grant Anderson, San Benito, Texas

EVENING SESSION, 7:30.

Address, Possibilities and Limitations of Inspection,
by Frank C. Pellett, Atlantic, Ia.

Address, Beekeeping in Canada (illustrated),
by Prof. Morley Pettit, Guelph, Ontario

MORNING SESSION, 10:00, FEB. 23.

Address, Out-apiances,
by C. P. Dadant, Hamilton, Ill.

Address, Insuring Honest Queen Values,
by Kenneth Hawkins, Plainfield, Ill.

Paper, Importance of Bees in Pollinating Economic Plants,
by L. H. Pammel, Ames, Ia.

AFTERNOON SESSION, 1:45

Address, Establishing a Trade Name,
by E. R. Root, Medina, Ohio

Address, The Comb-honey Market,
by R. A. Burnett, Chicago

Address, Shipping Honey, by F. G. Snook, Akron, O.
The Depressed Honey Markets,

by J. E. Pleasants, Orange, Cal.
Paper, The Qualities of Western Honey,
by J. H. Stoneman, Blackfoot, Ida.

NATIONAL BEEKEEPERS' ASSOCIATION BANQUET,

7:00 P. M.

Evening session immediately following the banquet.
Address, Beekeeping Improvement thru Agricultural School Work,

by Prof. Francis Jager, St. Paul, Minn.
Paper, Varying Characteristics of European Foul Brood,
by Grover Matthews, Filer, Ida.

MORNING SESSION, 10:00 A. M., FEBRUARY 24.

Paper, The National Honey Day and Its Possibilities,
by Floyd E. Smith, Dallas, Oregon

Discussion and demonstration,
Shipping Honey by Parcel Post,

led by E. D. Townsend, Northstar, Mich.

AFTERNOON SESSION, 1:45.

General discussion
Election of officers and directors
Adjournment

It will be seen that the last day's program is not very full. This program will be extended when the plans not completed at this writing are finished.

WESLEY FOSTER, Sec.

TRADE NOTES

EARLY CASH ORDERS.

The discount for early cash orders is two per cent for the month of February. This is worth saving. If you know what your needs are, send in your orders. There are two added reasons for being forehanded this season. In many cases there is an increasing delay in delivery of shipments because many railroad lines have more business than they are able to handle promptly. In some instances, especially in the East, conditions are so bad that there is an embargo on all shipments of freight except perishable goods. Then, too, the effect of the great war on the prices of many things is raising prices of materials to such an extent that we shall be compelled to increase selling prices on numerous articles into which these materials enter when our

present stocks are used up and we have to buy further supplies. For all three reasons, therefore, you will be wise in placing your orders early for such goods as you need.

HOTBED SASH.

The time is here for starting early-vegetable plants in a cold frame. If you are not provided with sash, remember we can supply them as usual, made of cypress, 3 feet 4 inches by 6 feet, 1 3/4 inches thick, for 4 rows of 8-inch glass, shipped KD, \$1.00 each; \$4.75 for 5, or \$9.00 for 10; 8 x 10 glass for same at \$2.80 per box of 90 lights. Three boxes will fit up 10 sash.

ALSIKE-CLOVER SEED.

We have secured a fair lot of alsike-clover seed which we offer, while it lasts, at \$22.00 per bag of 2 bushels; \$11.50 per bushel; \$6.00 per half-bushel; \$3.25 per peck; 25 cts. per pound, bags included, not prepaid. Alsike seed is so fine that four to six pounds to the acre is sufficient for a good stand. The market is quite firm on medium and mammoth clover seed, and it is worth, as a rule, 50 cts. to \$1.00 per bushel more than the price here named for alsike. We do not carry it in stock, but can get it for those who cannot conveniently obtain it near home.

SWEET-CLOVER SEED.

Having now secured a good stock of choice western hulled white-sweet-clover seed, we are prepared to offer much lower prices than have ruled for some time past. There has been a larger crop of seed harvested, and we believe there is also an increased demand. The scarifying process, insuring very high germination of the seed, makes ten pounds per acre sufficient where twenty to twenty-five has been recommended. This fact makes the same quantity of seed reach twice as far; or, to put it another way, to seed the same number of acres, only half the amount of seed is required. This fact, together with the increased production of seed, has prevented this year the usual advance in price. Some producers who have been holding their seed for the high prices which have prevailed the past two seasons are, we fear, going to be disappointed.

The hulled seed, which we offer for shipment from Medina, is scarified. The unhulled is not, because the hulls must first be removed before the hard shell of the seed kernel can be scratched. It does not pay to use unhulled seed, even at half the price of hulled and scarified seed, because, as a rule, the per cent of germination in unhulled seed is usually quite low. Too often a poorer stand will be secured with two or three times the number of pounds per acre of unhulled seed than of hulled and scarified seed. Nevertheless, we can still furnish the unhulled seed to those who want it.

Until further notice we quote the following prices:

	In lots of	1 lb.	10 lbs.	25 lbs.	100 lbs.
Hulled white sweet clover,					
<i>Melilotus alba</i> ,	24c	22c	21c	20c	
Hulled yellow sweet clover,					
<i>Melilotus officinalis</i> ,	20c	18c	17c	16c	
Hulled yellow annual,					
<i>Melilotus Indica</i> ,	8c	6c	5c	4c	

Unhulled white or yellow at 6 cts. per pound less than the hulled for the same quantity. Those who can use large quantities should write us. We may be able to supply the hulled and scarified seed from western Iowa or Kansas in good-sized lots at attractive prices.

THE A. I. ROOT CO., Medina, O.

I am Anxious to Serve You
L. W. Crovatt, Box 134 Savannah, Ga.

Root's Goods Exclusively
Warehouse, River and Abercorn Streets
1916 Catalog sent on request

Quality Quickly

There's the reason why we maintain two western branches and warehouses. The convenience of lower freight and prompter shipments, coupled with the excellence of our bee supplies, have been realized by western honey-producers.

It is unnecessary to talk here about the type of supplies carried in stock at these two distributing points.

The Proof of Quality

Our exhibit at the Panama-California Exposition was awarded a grand prize and a gold medal.

This is California's Decision

The A. I. Root Co., Los Angeles, Cal.

Geo. L. Emerson, Manager, 948 East Second St.

Where the Weed foundation-machines are making perfect non-sag foundation. Send us your wax to be made into foundation. We buy wax too.

Root Redwood Hives.—A sample hive body with cover and bottom KD, \$1.00. Quantity prices on application. We cut hive parts to order.

New machinery for manufacturing hives and frames has been added. Extractors are now shipped "knocked-down" from the factory at Medina.

The A. I. Root Co., San Francisco, Cal.

245 Mission Street

We have moved. Office and warehouse in the same building. Write for catalog and send us your list of wants.

"Hats Off to the New Management"

writes a Mission, Texas, customer

The old reliable line of Root's Beekeepers' Supplies with our new system of business management assures Texas beekeepers of service such as they have never before experienced.

Mr. B. I. Solomon, who is now in charge, has been with The A. I. Root Company for some years and knows their method of doing business.

We intend to carry a large and complete stock of supplies, and we also have our Weed foundation machines in shape to care for all orders promptly.

Give us an opportunity to convince you of our service.

Toepperwein & Mayfield Co.

Nolan and Cherry Sts.

San Antonio, Texas